Media and digital literacies in Canadian teacher educators' open educational practices: A post-intentional phenomenology

by

Helen J. DeWaard

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF

THE REQUIREMENTS FOR THE DEGREE OF

Doctor of Philosophy

in

EDUCATIONAL STUDIES

THE JOINT PhD PROGRAM, LAKEHEAD UNIVERSITY

(Orillia and Thunder Bay, Ontario)

November, 2023.

Digital and Web-Ready Document Link: Media and digital literacies in Canadian teacher educators' open educational practices: A post-intentional phenomenology

Certification

The following individuals certify that they have read, and recommend to the Joint PhD Program in Educational Studies for acceptance, the dissertation entitled:

Media and digital literacies in Canadian teacher educators' open educational practices: A post-intentional phenomenology

submitted by Helen J. DeWaard in partial fulfilment of the requirements for the degree of Doctor of Philosophy in Educational Studies

Examining Committee:

Supervisor Dr. Michael Hoechsmann
Supervisory Committee Member Dr. Angela van Barneveld
Supervisory Committee Member Dr. Bonnie Stewart
University Examiner Dr. Meridith Lovell-Johnson

External Supervisory Committee Members:
Dr. Barbara Brown

Abstract

In this qualitative post-intentional phenomenological research I share insights into the lived experiences of teacher educators who infuse their open educational practices with media and digital literacies in faculties of education in Canada. Current research in the field of open educational practices has limited exploration in the field of teacher education and has yet to explicitly examine the critical role played by media and digital literacies.

This research is grounded by theories of socio-constructivism, connectivism and pragmatism. Through a post-intentional phemonenological methodology research, I describe and differentiate between transcendental, interpretive, and post-intentional phenomenology. I explore conceptual frameworks for teacher education, open education, and an understanding of literacies. Through this dissertation, I work to untangle conceptions surrounding skills, fluencies, competencies, and literacies in the field of media and digital education as these apply to teacher educators. Through a crystallization approach in this research I generate materials from the data collected for this study, focusing on teacher educators' open educational practices, and media and digital literacies. Facets in the open educational practices of the teacher educators I interviewed include access, choice, and connections. Facets in the lived experiences of the teacher educators relevant to media and digital literacies include communication, creativity, and criticality.

In the findings, I outline components of media and digital literacies with explicit connections to established research frameworks that shape the open educational practices of the fourteen participants in this research. Dimension one identifies elements of communication, with a focus on communication as a human right for a common good and on human beings as storytellers by nature. Dimension two focuses on creativity with remix and problem solving as creative acts. Dimension three examines connecting with communities with a focus on equity,

care, and social justice. Dimension four explores criticality within the selection of tools, technologies, spaces, and places, as well as a critical examination of boundaries and criticality in datafication.

From this research, I offer insights into the lived experiences of teacher educators infusing media and digital skills, fluencies, competencies, and literacies into their open educational practices through communication, creativity, connectedness, and criticality, shifting beyond the physical and temporal constraints imposed by faculty of education processes. I consider implications and recommendations for further research, and conclude with summary thoughts about media and digital literacies in the open educational practices of teacher educators in Canada.

Dedication

This PhD dissertation is dedicated to my mom and dad, who dreamed of a better life for their children. Their passion for learning and education made it a priority throughout their lives. Their formal and informal learning never stopped, thus modelling for their children what was possible.

Declaration

The author wishes this PhD dissertation to be available under a Creative Commons license CC BY-SA. This means you can use and remix information from this dissertation, excepting referenced works or citations that fall under copyright. You need to give attribution to the author of this original work and you should share-alike by using a similar license on remixed works.

Acknowledgements

I am not alone in this PhD research work. I acknowledge those who openly contributed to this journey taken, one step at a time. I thank and recognize all of you who have gotten me here, to this accomplishment in my academic and scholarly endeavours.

To my supervisor and committee members: You continue to push and pull my thinking and strategically question my ideas. You always support my efforts and encourage me to reach deeper to clarify my work.

To the participants in this research: Your stories and insights, shared through conversations and laughter, bring compassion and joy to this research. Your openness in teaching and learning enriches the field of teacher education within your individual faculties, the communities in which you share, and the global network who gains so much from these Canadian experiences.

To my parents – mem and heit: As your daughter I am shaped by your journey as post-war immigrants leaving your home in the Netherlands to find new opportunities to farm and raise a family in Canada. I am forever in awe of your accomplishments as I remember your presence in my life. You are gone but your legacy and light lives on.

To my husband: You are my partner in life and are always supportive of my new ventures into teaching and learning. You are there when I need a push to move forward and support me when I need to retract from it all. You are my rock.

To my children: I am always amazed at your presences, personalities, and relationships. You are the gifts that add light to my journey.

To my siblings: We may not be on the same paths, but we are connected, together. As a first-generation post-secondary attender and the first in my family to work towards a PhD, I rely on your honest and critical support.

To Mag 8: Friends from near and afar, sisters from other mothers, your enthusiasm and words of encouragement mean so much.

To critical friends and extended professional learning networks, particularly the GO-GN group: I reach out and you are there, found across the world. Your voices resonate.

To my Joint PhD cohort and classmates: our conversations always enlighten and entertain. May you all reach the goal you hope to achieve in our shared academic journey.

How to Read this Dissertation

This dissertation is offered as a digital and interactive document using Scalar software. The location for this document is Media and digital literacies in Canadian teacher educators' open educational practices: A post-intentional phenomenology.

Reading this dissertation benefits from some awareness of the affordances of the software. For those not familiar with this software, this video that I created may provide some tips and suggestions to get you started.

Navigating Scalar – Video [linked here]

Although I make every effort to follow the American Psychological Association (APA) formatting guidelines, there are some evident discrepancies that I will explain here, rather than be called out for non-compliance in a scholarly work. Many of these variations on APA are made as a result of this digital delivery, constraints imposed by the affordances of the tools being used, and in consideration of the readability of the overall document.

First, there is a space inserted after each paragraph, which allows the eye to wander down a page and more easily locate a section or paragraph. This also allows for reference citations to designate the specific page and paragraph number, since each page in Scalar has a distinct uniform resource locator. Thus, the page and paragraph in this digital document can become a source and reference for other academic writing. Please note that I have also created a portable document format (PDF) of this dissertation that adheres strictly to APA formatting. This is a requirement of the university for the completion of the PhD. Any errors in either document are not intentional and are acknowledged as human mistakes. The provenance of each page and object in this document is available by contacting the author.

Second, the affordances of Scalar to insert notes and media within text and pages has increased the interactivity of this document, allowing for 'just-in-time' locating of glossary

items as you are reading. In the PDF version of this dissertation, the glossary items and descriptions are located at the end of the document rather than being embedded within the pages of the manuscript. Although the software affords a fully interactive and media rich document production, I have constrained and restrained this document to only contain notes, media, and links to external internet locations to those that support the academic and scholarly nature and topic of this manuscript.

Please note that in order to comply with university requirements for a PhD dissertation, I have also created a portable document format (PDF) version of this dissertation that strictly adheres to APA formatting. Any errors in either document are not intentional and are acknowledged as human mistakes. The provenance of each page and object in this document is available by contacting the author.

Table of Contents

List of Tables

List of Figures

List of Abbreviations

ALT DISS	Alternative Dissertation
CAQDAS	Computer Assisted Qualitative Data Analysis Software
CMEC	Council of Ministers of Education, Canada
FoE	Faculty of Education, Faculties of Education
GO-GN	Global Open Education Resources Graduate Network
IPA	Interpretive Phenomenological Analysis
MDL	Media and Digital Literacies
MIL	Media and Information Literacy
MOOC	Massive Open Online Course
OE	Open Education
OER	Open Educational Resources
OEP	Open Educational Pedagogies
OEPr	Open Educational Practices
PDF	Portable Document Format
P-IP	Post-Intentional Phenomenology
PNG	Portable Network Graphic (file format for images)
REB	Research Ethics Board
SSHRC	Social Sciences and Humanities Research Council
TCs	Teacher Candidates
TEd / TEds	Teacher Educator / Teacher Educators
TPACK	Technological, Pedagogical, and Content Knowledge
UNESCO	United Nations Educational, Scientific and Cultural Organization

Glossary

Here is an alphabetic listing of the glossary items included at the end of this dissertation document. Each item is linked to the item where it is defined, described, and/or examples provided, and where the URL link to the Scalar item

Actor Network Theory	Media and Information Literacy (MIL)
Affinity Spaces	Open Educational Practices (OEPr)
Alternative Dissertation	Organization for Economic Co-operation and Development
Artificial Intelligence (AI)	Paywall
Black Box technology	Platforms
Block Chain	Portable Document Format (PDF)
ChatGPT	Portable Network Graphic (PNG)
Computer Assisted Qualitative Data Analysis Software (CAQDAS)	Post-Intentional Phenomenology (P-IP)
Creative Commons	Practice
Cynefin Framework	Research Ethics Board (REB)
Data Gathering	Safety, Security, Privacy, Permission
Digital Rights Management	Social Sciences and Humanities Research Council, Canada (SSHRC)
Educommunication	Teacher Candidates (TCs)
Emirec	Teacher Educators (TEds)
Episteme / Phronesis	Teacher Educator Technology Competencies (TETCs)
Faculty of Education (FoE)	TPACK
#FemEdTech	Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans
Free and Open Software	UNESCO
Homo Faber	Uniform Resource Locator (URL)
Hupomnemata	Universal Serial Bus (USB)
Interpretive Phenomenological Analysis (IPA)	
Learning Management Systems	
Makerspace	
Massive Open Online Course (MOOC)	

Chapter 1: Beginning

This dissertation outlines my exploration into the lived experiences of teacher educators in Canadian faculties of education (FoE) with media and digital literacies within an openly shared teaching practice. I stand within the confluence of three fields of study, so this research emerges from my own lived experiences as a teacher educator, open educator, and explorer of critical media and digital literacies. This research is a response to my passion to bring teacher education into the open and a desire to amplify teacher educators' voices beyond the field of education. I incorporate the living literacies proposed by Pahl et al., (2020) into the lived experiences with media and digital literacies in teaching practices of teacher educators. This research supports the growing demand for digitally and media literate educators (CMEC, 2020a) and is a response to global calls for open educational practices (Bates, 2019; Montoya, 2018, UNESCO, 2019).

For this research, I apply a post-intentional phenomenological methodology to explore teacher educators' stories of their lived experiences within their participatory, collaborative, networked, shared, and public-facing educational practices (Cronin & MacLaren, 2018; Lohnes Watulak, 2018; Lohnes Watulak et al., 2018; Tur et al., 2020). Current research in the field of open educational practices (OEPr) has limited exploration in the field of teacher education and has yet to explicitly examine the critical role played by media and digital literacies (Bozkurt et al., 2019; Cronin, 2017). This prompted my wonderings about how teacher educators' OEPr are impacted by the application or absence of media and digital literacies?

This dissertation is presented in six chapters. In chapter one I share the rationale and research questions driving this investigation, followed by my positionality as an educator and scholar in the field of teacher education. I then share details and the rationale for the alternative dissertation (ALT-DISS) production format for this manuscript. Chapter two includes the literature review outlining the theoretical and conceptual frameworks grounding the research of

media and digital literacies in teacher education from an open educational lens. In chapter three I share the research design for this inquiry including the methodology and methods. This includes the data gathering methods, research phases and timelines, participant involvement, interview design, coding and analysis processes, and the ethics review considerations. In chapter four I share the data analysis and results obtained from the research. Chapter five includes the discussion of the findings. In chapter six, I conclude this dissertation with chapter summaries, implications, limitations, recommendations and conclusions from this research.

1.1 Background

I design and teach about teaching and learning in a teacher education program in Canada. I am a life-long practitioner of the art and science of teaching and learning. It is through this research that I aim to understand the lived experiences of teacher educators as they apply media and digital literacies (MDL) within Canadian teacher education, as evidenced within their OEPr. This is of interest because I am a Canadian teacher by profession and a teacher educator by choice.

Critical literacies is an important research focus, as evident from the growing political and public demands for literacies in all areas of education (CMEC, 2020b; OECD, 2018; Zimmer, 2018). Calls for educational responses to 'fake news' (Gallagher & Rowsell, 2017) and the teaching of digital citizenship to combat cyberbullying (Choi et al., 2018; Jones & Mitchell, 2016) increasingly influence educational landscapes in Canada (DeWaard & Hoechsmann, 2021; Hoechsmann & DeWaard, 2015).

Digital literacy and competency frameworks have been developed by the United Nations Educational, Scientific and Cultural Organization (UNESCO), where the notion of education as common good(s) is amplified and shifts from previous notions of education as individualistic and economically entangled public good(s). UNESCO promotes a focus on open educational practices and networks as mechanisms for change (Daviet, 2016; Law et al., 2018). Common good(s) and contributing to societal well-being are undergirded with a humanistic and holistic

belief system (Daviet, 2016). This is echoed in the European Union documents where efforts enhance education for citizenship (Carretero Gomez et al., 2017; Law et al., 2018).

Although research focuses on MDL in the K-12 education sector (Buss et al., 2018; Gallagher & Rowsell, 2017), on teachers in the classroom (Choi et al., 2018), teaching and learning in higher education contexts (Castañeda & Selwyn, 2018); and, teacher candidates being prepared for a career in teaching (Cam & Kiyici, 2017; Cantabrana et al., 2019; Cervetti et al., 2006; Gretter & Yadav, 2018) there is little research studying the media and digital literacies or OEPr of teacher educators (Foulger et al., 2017; Knezek et al., 2019; Krumsvik, 2014; Petrarca & Kitchen, 2017a). From this preliminary review of the literature, I generated a direction for my research study.

The Canadian Council of Ministers of Education (CMEC) and the National Council of Teachers of English emphasized the need for enhanced literacy development in conjunction with technology competencies in education for all provincial education jurisdictions (Gallagher & Rowsell, 2017). The Canadians for 21st Century Learning & Innovation document *Shifting Minds: A 21st century vision of public education for Canada* (C21, 2012) identified key skills and competencies learners should possess, which suggests that teachers, teacher candidates, and teacher educators should also possess these skills and competencies. In the United States, the development of a set of technology competencies for teacher educators (Foulger et al., 2017) indicated the need for a reconceptualization of current Faculty of Education (FoE) structures and teacher educators' practices.

Since a "teacher's knowledge is an essential component in improving educational practice" (Connelly et al., 1997, p. 674) this research explored the lived experiences of teacher educators who openly share experiences and applications with a consideration toward MDL as part of their teaching practice. Sharing openness in educational practices "does not require overcoming huge technical obstacles, but rather, requires a change in mindset and a differing

view of practice, and of how learning can be achieved" (Couros, 2006, p. 188). A better understanding of the contexts of MDL within FoE can emerge when teacher educators' voices and stories are represented. This investigation adds to the limited research addressing the needs of teacher educators or how teacher educators infuse MDL into their teaching practice (Lohnes Watulak, 2016; Phuong et al., 2018; Seward & Nguyen, 2019; Stokes-Beverley & Simoy, 2016).

Because I espouse to be an open educational practitioner, promoting OEPr in the courses I design and teach, I aim to further understand the role of OEPr within teacher education in general, and within the lived experiences of others who work openly as teacher educators. Through this research I aim to explore, revise, and add to current definitions of OEPr (Couros, 2006; Cronin & MacLaren, 2018; Nascimbeni & Burgos, 2016; Paskevicius, 2017; Tur et al., 2020). In this research, I aim to uncover connections between current conceptualizations of OEPr with understandings of MDL (Buckingham, 2020; Gee, 2015; Hoechsmann, 2019; Stordy, 2015) and living literacies (Pahl et al., 2020).

This research responds to a call from Zawacki-Richter et al., (2020) to "re-explore the benefits of openness in education to respond to emerging needs, advance the field, and envision a better world" (p. 329). Cronin (2017) reveals connections between OEPr and digital literacies which I believe to be essential to the work of open educators. Through this research I endeavour to find connections between MDL and OEPr within the lived experiences of teacher educators (TEds) as they navigate and negotiate their teaching practice into the open.

This research not only adds to rapidly evolving discussions about OEPr but also contributes a focus on teacher educators (Zawacki-Richter et al., 2020). I believe that teacher educators bring experience in educational teaching practice to the nexus between OEPr, teaching, and MDL. Teacher educators from diverse Canadian FoE sites were invited to participate in interviews to "story" (Clandinin, 2015) their OEPr, and reflect on their MDL negotiations. The ubiquity of electronic technologies in the functional milieu of today's educational environments,

particularly in light of the global COVID-19 pandemic, suggested that digital tools are both field and method for research studies (Burrell, 2009; Markham, 2016).

1.2 Rationale

Educational issues resulting from the COVID-19 pandemic heightened awareness of the need for literate and digitally proficient individuals within every facet of the education sector. In my role as a learning designer and teacher educator in Canadian FoE, my lived experience is immersed into my work designing logistical and navigational elements for teaching within digitally enabled learning environments. Rapid emergency online instruction (Hodges et al., 2020), around the clock media consumption focusing on educational deficit narratives, and ongoing changes in digital technologies and expectation are shaping the push for the development of global competencies (CMEC, 2020).

Prior to, and emerging from recent pandemic related issues, the need for an informed and technologically prepared teaching workforce is identified in policy and position papers nationally and globally:

- the United Nations Leading Sustainable Development Goals - Education 2030 (United Nations, 2015) report establishes teacher education as one of the priorities in the achievement of sustainable development goals;
- the United Nations Educational, Scientific and Cultural Organization (UNESCO) continues to examine policies and practices for media and information literacies (Singh et al., 2016), digital citizenship (Law et al., 2018), and open educational resources (Sobe, 2022; UNESCO, 2019) and information and communication technology competencies in teacher development (UNESCO, 2022, 2023);
- the push for open educational resources (UNESCO, 2019) and open access extends through the open consultation process by an international commission from UNESCO on the Futures of Education which highlights the need to "mobilize the many rich ways of

being and knowing in order to leverage humanity's collective intelligence" (UNESCO, 2019, paragraph – "The aim …);

- the Organization for Economic Co-operation and Development researches and documents the need for teachers to be "high-level knowledge workers who constantly advance their own professional knowledge as well as that of their profession" (Schleicher, 2012, p. 108) noting that the demands on teachers are continuing to increase (Schleicher, 2018);
- a position paper from the European Literacy Policy Network indicates that teachers may "lack competence, confidence and knowledge of effective strategies to harness the potential of diverse technologies to enhance digital literacy teaching and learning" (Lemos & Nascimbeni, 2016, p. 3);
- the U.S. Department of Educational Technology released the document *Advancing Educational Technology in Teacher Preparation: Policy Brief* (Stokes-Beverley & Simoy, 2016); and,
- in Canada, the Canadian government report *Democracy Under Threat* (Zimmer, 2018) outlines the need to address education of digital literacies. The Council of Ministers of Education, Canada (2020) provides a systems-level framework for global competencies which further drives the transformation of the educational agenda in Canada (CMEC, 2020a). The *Digital Learning in Canada in 2022* report identifies digital literacies as a pressing issue (Irhouma & Johnson, 2022).

These identified needs from global and national levels are ever more pressing during current priorities for online and remote educational instruction. I suggest that pressures resulting from the pandemic will continue to push the field of teacher education and the application of critical media and digital literacies within FoE into the forefront. Yet the field of teacher education, and more specifically the MDL of those who teach in Canadian FoE from an open educational stance, remains a misunderstood and ignored field of endeavour. This research will add insights

into the impact of these influences and pressures on teaching and learning within teacher education programs since these are rarely researched.

These are not new issues, despite the many changes that occurred in light of the response of educational systems, particularly in FoE, to the global health crises precipitated by the COVID-19 pandemic. Along with a public outcry for media literacies in the face of fake news (Singh et al., 2016) and increasing demands for technologically and digitally literate populations, there is a push to change teacher education generally and the teaching practices of those who teach in teacher educator programs more specifically (Beck, 2016; Ellis & McNicholl, 2015; Foulger et al., 2017; Stillman et al., 2019). Connected to this issue is the revitalization of teacher education programs in order to "prepare teachers who will teach in transformative ways and leverage technology as a problem-solving tool" (Schmidt-Crawford et al., 2018, p. 132). The paucity of research relating to the MDL work of teacher educators practicing in open educational spaces is a disadvantage when evidence for the effectiveness of educational practices is increasingly demanded (Beck, 2016).

It is in this context, from my lived experiences as a teacher educator and learning designer in Canadian faculties of education that my investigations were shaped. My purpose for this research was to add to the corpus of research focusing on teacher educators and aims to expand understanding of open educational practices (OEPr) from teacher educators' contexts by examining the lived experiences of teacher educators who reveal their teaching practices openly, with a specific focus on their understanding and practice with media and digital literacies. I intentionally selected Canadian FoE since this was contextually familiar and where I engaged and shared materials openly within my professional learning networks. I initially considered conducting research within only Ontario FoE but realized I may not find enough participants that fit the established criteria in that limited context. Limiting the participant pool would also exclude some of the voices in Canadian open educational contexts that I hoped to include in the

research. While I understood that each FoE is unique, it was this dissimilarity that I hoped would add nuance and richness to the lived experiences of the participant. I also considered global FoE contexts but determined that this wider scope would hinder the research; the extent of the dissimilarities would interfere with finding commonalities in the stories of lived experiences within MDL in the OEPr of TEds in FoE. These delimiting factors helped me frame the research questions.

1.3 Research Questions

The primary question for this research is: What lived experiences of media and digital literacies are evident in the open educational practices of teacher educators in Canadian faculties of education?

These sub-questions will help frame the research:

- What are the lived experiences with media and digital literacies of teacher educators?
- How do media and digital literacies inform or shape practices of teacher educators immersed in OEPr?
- What are the lived MDL experiences of teacher educators in Canada, as evidenced in the ethos and actions within their OEPr?

Research defines OEPr as collaborative pedagogies utilizing digital technologies and authentic learning encounters for "interaction, peer-learning, knowledge creation, and empowerment of learners" (Cronin, 2017, p. 18). In other words, teacher educators will individually or collaboratively select OEPr to support their ways of knowing, designing, planning, and assessing teaching and learning events (Cronin, 2017; Nascimbeni, 2018; Paskevicius, 2018; Paskevicius & Irvine, 2019).

Through this research I capture the teacher educators' storied enactment of MDL within OEPr as shared through their experiences (what people feel); practices (what people do); things (the objects that are part of our lives); relationships (our intimate social environments); social

worlds (the groups and wider social configurations through which people relate to each other); localities (the actual physically shared contexts that we inhabit); and events (the coming together of diverse things in public contexts) (Pink et al., 2015). When gathering these stories, I bring my own lived experiences with MDL in my OEPr as a teacher educator to provide both background and a catalyst through which these stories will reflect and refract.

This post-intentional phenomenological research (Rosenberger & Verbeek, 2015; Tracy, 2020; Vagle, 2018; Valentine et al., 2018) is explained in the next sections of this dissertation, where I bring critical subjectivity, collaborative action, a pragmatic reality, and an epistemology of experience to this inquiry (Guba & Lincoln, 2005). I apply a crystallizing methodology (Ellingson, 2009) to share my voice, reflexivity and media infused textual representations, described as traditional alpha-numeric texts incorporated within images and graphic designs. In this way, I will be interrogated as I locate my 'self' as researcher-participant, both within and outside the research field of study (Guba & Lincoln, 2005).

1.4 Positionality

This research is grounded in my experiences in education, as well as my extensive background as an elementary school educator. I bring my own lived experiences as an open educator, teacher educator, teacher of critical media and digital literacies, and novice researcher to this dissertation work. This research is informed through my engagement in global networks such as the Global OER Graduate Network (GO-GN), UNESCO Open Education for a Better World, and the Open/Education Technology, Society and Scholarship Association. This research is enhanced by cross-border collaborations within Virtually Connecting and the International Society for Technology in Education Inclusive Learning Network, as well as my explorations in open educational spaces such as Ontario Extend, Ontario Open Education Fellows, Creative Commons, and Mozilla Open Leaders. These places and spaces inform and shape this dissertation and research.

My positionality as a new researcher is supported by my academic persona as a scholarly writer and media-making educator. This post-phenomenological research (Vagle, 2018; Valentine et al., 2018) applies crystallization methodologies (Ellingson, 2014; Ellingson, 2009) to explore teacher educators' lived experiences and stories of becoming, as revealed in their hupomnemata (Foucault, 1988; Weisgerber & Butler, 2016) and through their interview conversations. In this research, I explicate how these lived experience stories and artifacts, as shared by participating Canadian TEds, are gathered and become offerings of research data, since "everything that shows, *offers*" (Rocha, 2015, p. 6, emphasis in original).

1.5 Alternative Dissertation Format

"What is the reading of a text, in fact, except the recording of certain thematic recurrences, certain inconsistencies of forms and meanings?" (Calvino, 1979)

To honour the topic of media and digital literacies, and to authentically share and reveal the MDL under investigation, the results of my research are presented in an openly accessible, alternatively created, digitally enabled format. This document is presented as an interactive text to explore thematic recurrences and inconsistent forms or meanings, as suggested by Calvino (1979). Although I use and apply a variety of media and digital strategies and techniques, this "open-ended, problematic, critical, polyphonic" text (Denzin & Lincoln, 2005, p. 1124) is my attempt to bend and circumvent the boundaries imposed by traditional alpha/numeric dissertation representations. In this dissertation format I reflected and created a non-linear, hyper-textually linked, dialogic, conceptually and topically interconnected and networked rendering of my research, thus mirroring the nature of this qualitative research. By reading this text, as Calvino suggests in the quote above, you will undoubtedly become aware of and possibly record occasions of thematic recurrences, inconsistencies, and shifting meanings.

Ihde and Malafouris (2019) referenced the notion of *homo faber*, which connected to the writing by Thomas and Seely Brown (2009) who positioned humans as maker and emphasized

our ability to create. This is grounded in the words of Arendt (1958, 1998) who suggested that the "implements and tools of *homo faber*, from which the most fundamental experience of instrumentality arises, determine all work and fabrication" (p. 153). The notion of homo faber suggests that humanity is evolutionarily constituted and shaped by the technologies we use. New materialities and digital ecospheres encompass all aspects of living and learning (Pahl et al., 2020; Sameshima et al., 2019). We are thus constructed by the tools that we've constructed and by which we engage in relationships and construct our learning (Ihde & Malafouris, 2019). I am constructed as an academic and researcher in this PhD process while creating the dissertation as product. This dissertation echoes McLuhan's position that the medium is the message (McLuhan, 1964).

My dissertation process and product look beyond what may be obvious and common, seeking the hidden "changes or effects that are enabled, enhanced, accelerated or extended by the new thing" (Federman, 2004). This alternative dissertation will "suit the style as much as possible to the matter" (McLuhan & McLuhan, 1992, p. xi). In this way, my research and the resulting dissertation can be seen to critically analyze the privilege of representation, voice, and academy.

Deciding to shift my research process and product into a fully interactive and digital environment fits with the ontological and epistemological frameworks within which I study. Pockley, the creator of the first electronic dissertation in 1995, described texts as "mutable streams of thought, open to annotation, revision, re-presentation and part of the very fabric of their community of interest" (Jacobs, 2008, p. 245). By preparing and presenting my research and dissertation in an alternative dissertation (ALT-DISS) format, I contribute to the breaking open of "calcified conventions" sustaining the linear privilege of print text (Troll Covey, 2013) as traditionally found in electronic dissertation and theses formats relying on static portable document format (PDF) manuscripts. With my experiences in producing and sharing media texts,

I recognize the “cultural agoraphobia, the cognitive bias that leads us to underestimate the potential of openness” and will push open the structure, media, notions of authorship, and methods of assessment in the process and products of my research and dissertation (Troll Covey, 2013, p. 550).

As evidenced in this dissertation, I have designed paths through the research information, but it is YOU, the reader of this interactive web created document, who will control the serendipitous navigation through the content. YOU control the reading experience. You determine the strategic use of hyperlinks, embedded media, graphic organizers, taxonomic features, and visualization options and affordances in the Scalar software. These elements reflect a media filled, rich, thick description, and exemplifies the open nature of this dissertation.

Scalar software was strategically and intentionally selected to present the research results within a fluid, editable, elastic format that is “open to annotation and responsive to change” (Jacobs, 2008, p. 237). Previously published Scalar dissertations model the use of this digital tool and provide the opportunity to explore, experience and understand the digital mechanisms available in this form of digital publication (Dixon, 2014a, 2014b).

Since my research and dissertation are not devoid of political dimensions, and to meet institutional requirements for a ‘frozen in time’ document as a representation of my research capabilities (Barrett, 2014; Jacobs, 2008), a secondary linear PDF version was also produced. Dissemination of research results will be pursued through traditional, peer reviewed Canadian and international journals, conference presentations, and through open social media and web publications.

In rendering this dissertation differently, I heed Denzin's (2017) call to "unsettle traditional concepts of what counts as research, as evidence, as legitimate inquiry" (p. 8). There may be elements here that reflect postmodernist compositions such as those found in Italo Calvino's (1979) novel *If on A Winter's Night A Traveler* and Luigi Serafini's (1981) *Codex*

Seraphinianus which is described as an illustrated encyclopedia of an imaginary world using an imaginary language and code. This dissertation is alternatively creator and created. It is both *dispositio*, described as a remix or mashup, a composition and arrangement of an academic argument, and *inventio*, described as being traditional, original, and sole authorship production (Hoechsmann in MacKenzie et al., 2022).

1.6 Chapter Summary

In summary, this introductory chapter lays out the background and explores my rationale for conducting this research. Then the research questions are stated. My researcher positionality is presented and the reasoning for the alternative design used for this dissertation document is explained. Table 1 provides a synopsis of my research agenda as recommended by Cresswell and Guetterman (2019) and modelled by Paskevicius (2018).

Table 1

Synopsis of Research Agenda

Item	Description
Topic	A post-intentional phenomenological study into the media and digital literacies in Canadian teacher educators' open educational practices.
Problem	Identified needs for media and digital literacies are found in global and national level reports. This presents an ever more pressing problem for teachers and teacher educators given the current priority for online and remote educational instruction.
Purpose	This research adds to the corpus of research focusing on teacher educators and expands on understandings of open educational practices particularly from teacher educators' contexts by examining the lived experiences of teacher educators who reveal their teaching practices openly, with a specific focus on their understanding and practice with media and digital literacies.
Research Questions	What lived experiences of media and digital literacies are evident in the open educational practices of teacher educators in Canadian faculties of education? • What are the lived experiences with media and digital literacies of teacher educators? • How do media and digital literacies inform or shape practices of teacher educators immersed in OEPr? • What are the lived MDL experiences of teacher educators in Canada, as evidenced in the ethos and actions within their OEPr?

In the next chapter I provide the theoretical and conceptual frameworks used in this dissertation research. This includes theories of socio-constructivism, connectivism, philosophy of technology, and pragmatism. I explore phenomenology with a focus on post-intentional phenomenology as a framework for this research. Under the conceptual frameworks section, I examine fields of endeavour relating to teaching and teacher educators, media and digital literacies, and open education.

Chapter 2: Literature Review

Research frameworks are foundational to all qualitative and quantitative research (Grant & Osanloo, 2014). My research ideas continued to emerge as I explored and constructed this dissertation. The frameworks I studied guided my research path and helped me stay on track, but also allowing me to push into new directions. The ontologies, epistemologies, methodologies, and methods outlined in this dissertation frame my research story. In this way I take you, the reader, on a "quest with some guiding principle (theory), using one or more ways of traveling (methods) in order to obtain some hitherto elusive prize (results) that is valuable to one or more interested parties (applications and implications)" (Ellingson, 2017, p. 66). As bell hooks (1994) suggested, my "engaged voice must never be fixed and absolute but always changing, always evolving in dialogue with a world beyond" (p. 11).

The theoretical framework outlined the metaphoric and foundational knowledge for this research (Grant & Osanloo, 2014). In this dissertation, I made a distinction between theoretical and conceptual frameworks as these are "neither interchangeable or synonymous" (Grant & Osanloo, 2014, p. 16). Through the theoretical frameworks, I analyzed my ontological and epistemic lenses. I explored these core, foundational elements as I outlined the underpinnings of this dissertation.

The conceptual framework outlined the factors, constructs, variables, and relationships within the research design (Grant & Osanloo, 2014) and also being reflexively analyzed through my ontological and epistemic lenses. In the conceptual framework section of the literature review, I examined research in three key areas and fields of study. These include teacher education, with a specific focus on teacher educators in faculties of education, OEPr, and media and digital literacies. The literature review section of this dissertation concludes with a graphic

rendering, as an element of the crystallization methodology, remixing the theoretical and conceptual frameworks as they impact and shape the research.

2.1 Theoretical Frameworks

A theoretical framework identifies a researcher's worldview, from the heart, not the head, and impacts every decision made in the unfolding of the research (Grant & Osanloo, 2014). Since theoretical frameworks are built from existing theories, mine are shared here as borrowed blueprints, as I describe the concepts, assumptions and beliefs relating to my research (Grant & Osanloo, 2014).

This dissertation is grounded in the theoretical foundations of socio-cultural constructivist theories of learning originating from Dewey (1916), Vygotsky (Lowenthal & Muth, 2009; Roth & Lee, 2007), and Papert (Papert & Harel, 1991). This constructivist paradigm adopts a relativist ontology, suggesting there are many possible realities, and a subjectivist epistemology whereby the researcher and participant co-create shared understanding (Denzin & Lincoln, 2013). Interpretivist research strives to construct knowledge from individual meaning and viewpoints (Tomaszewski et al., 2020). The interpretive researcher is described as a bricoleur (Denzin, 2017; Denzin & Lincoln, 2011) informed by "personal history, biography, gender, social class, race, and ethnicity and those of the people in the setting; one who stitches, edits, and puts slices of reality together" (Denzin & Lincoln, 2011, p. 5). In this research, I push this notion of researcher as bricoleur by applying a crystallization approach (Ellingson, 2009) through my active and creative mixing of elements into something precious and worthy of recognition. I further explore crystallization in the methodology section of this dissertation.

This research is further framed by a post-modernist paradigm (Turyahikayo, 2021) since I "question totalizing truths and certainty, reject grand theories and master narratives that tidily explain a phenomenon, and resist the idea that, with just more research, we can better control the world" (Tracy, 2020, p. 55). As a scholar with a post-modernist paradigm view, I considered

knowledge and power as "fragmented, multiple, situated, and multi-faceted" (Tracy, 2020, p. 56). Although I ponder issues of power and hegemony, my research examined the layers of reality experienced by open educational practitioners in faculties of education in Canada. From this approach, I explored the lived experiences that emerge through teacher educators' agency and choice (Tracy, 2020) as media and digital literacies are acquired and applied.

As a scholarly researcher and writer within a post-modernist paradigm (Turyahikayo, 2021) I recognized that meaning is dependent on the signs, signifiers, and relationships between textual elements residing within a context, where the conception of text is extended to incorporate multiple and varied communicative formats such as images, video, audio, and multimodal compositions (Gee, 2011; Kress, 2010). From this post-modernist paradigm stance, this crisis of representation suggests that the meaning of images and text constantly shift and intertwine, that "explanations and descriptions are unstable and relational", and that "one type of text is not necessarily more real than another" (Tracy, 2020, p. 56). In this way, I not only examined texts that are rhizomatically interwoven and interconnected, but also created and shared texts emerging from this research that are multi-faceted, interdependent, and relational (Ellingson, 2009; Tracy, 2020).

2.1.1 Constructivism

This research is grounded in the theoretical landscapes of constructivism outlined by John Dewey (1910, 1916) and Jean Piaget (DeVries, 2008; Piaget, 1977) who suggested teaching and learning are active, experiential processes. Social-constructivism, as advocated by Lev Vygotsky (Burkitt, 2006; Vygotsky, 1934, 1986) extends constructivist theory to include social and historical context into the learning equation. I believe learning occurs through the active construction and engagement with others, through objects which can be manipulated in time and space (Papert & Harel, 1991). Dewey, Vygotzky and Papert are theorists who ground this research since I believe that MDL and OEPr occur within active, experiential, engaging,

constructions, not bound by time or space, while interacting with others. Further to this, situated cognition theory, that builds on Vygotzky's work (Burkitt, 2006), proposed that learning is constructed through interactions within social settings, engaging with semiotics, and interacting with material artifacts (Seely Brown et al., 1989). Situated cognition theory (Collins et al., 1989; Gee, 2004; Lave & Wenger, 1991) added to this research since the practice of teaching and learning simultaneously occur in mind, body, and activity, through relationships, bounded in communities of practice. Paying attention to the cultural, situational, and logistical signs and signifiers impacted my understanding of the phenomena being researched and how teacher educators navigated into MDL and digitally enabled OEPr spaces.

2.1.2 Connectivism

Since my field of study is cognition and learning, the theory of connectivism (Siemens, 2018) was foundational to this research. Connectivism related to the role of cognition in generating connections and networks, both internally and externally to the human brain. Siemens (2012) described the principles of connectivism as a "response to a perceived increasing need to derive and express meaning, and gain and share knowledge. This is promoted through externalization and the recognition and interpretation of patterns are shaped by complex networks" (Tschofen & Mackness, 2012, p. 125).

The four key principles of connectivism – autonomy, connectedness, diversity, and openness – (Siemens, 2012; Tschofen & Mackness, 2012) are supported by emerging technologies that are shaping human cognition in the way we "create, store, and distribute knowledge" (Couros, 2010, p. 114). For this research, the cognitive and metacognitive processes, the thinking about thinking with technology, and the thinking with others within connectivist structures enabled by technology, as an expression of the lived experiences of teacher educators, were explored in the stories of the teacher educators' teaching and scholarship as they navigated and made sense of complex MDL and OEPr amalgamations.

2.1.3 Philosophy of Technology

This research was influenced by the philosophy of technology and material engagement theory (Ihde, 2011; Ihde & Malafouris, 2019) in an effort to better understand the human–technology relationship. Although the conception of open education does not absolutely require the use of technology, for this research with its focus on digital literacies, the integration of technology was an essential consideration. Ihde and Malafouris (2019) suggested that "the difference that makes the difference is the recursive effect that the things we make and our skills in making seem to have on human becoming" (p. 195). I recognized that the everyday use of technology in education does not take place in a vacuum nor embody a neutral stance (Van Den Eede et al., 2015). Mediations of reality, as experienced and practiced, are shaped by the tools we use, since "artifacts are able to exert influence as material things, not only as signs or carriers of meaning" (Verbeek, 2011, p. 10).

Although not foundational to this research, some understanding of the actor network theory was necessary (Blok et al., 2019) for this research since it offered some comparison to a philosophy of technology. Similarities included an inter-relational ontology, a material sensitivity, and a rejection of subject-object dichotomy (Ihde, 2015). Both were considered for this research. However, it is the appeal of the philosophy of technology, which focused on the human action and perception as embodied with/through technology, rather than the linguistic-textual semiotics of engagement offered by ANT, that I based this research (Ihde, 2015). My interest focused on understanding how technological mediations and artifacts influenced MDL considerations, and how the individual and socially negotiated actions lead to a teacher educator's enacted OEPr.

2.1.4 Pragmatism

Although not a primary focus for this research, the theoretical and ontological approaches found within pragmatism held some sway over my worldview and thus needed to be explicated within

this research. First, as a pragmatist, I understood that past patterns of action may not suit future problems, which suited the uncertainty and rapid change that occurred within MDL and OEPr spaces (Belshaw, 2011). Second, the allowance for error and chance made pragmatism a practical philosophy and removed the need for perfection and the all-knowing-eye of the researcher (Belshaw, 2011). Third, pragmatism rejected the notion of an objective stance through which truth or belief are established, as "reasoning is allied to experience rather than replacing it" (Belshaw, 2011, p. 131). Fourth, pragmatists understood that experiences are more than the sum of the compilation of all the parts. In this way, pragmatic projects are not bounded by explicit frameworks, but are reflections in action as a way to 'unthink' the experiences (Belshaw, 2011). For these reasons, the shadows of pragmatism are evident in the practical applications and decisions I made within this research work.

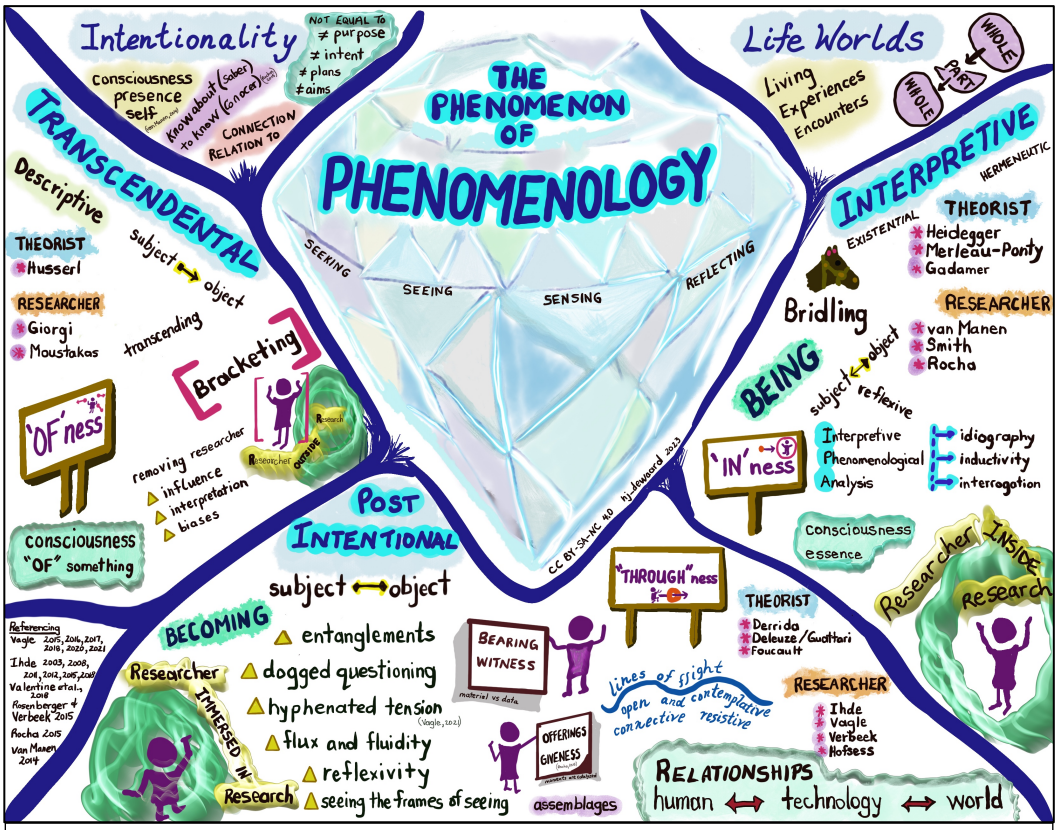
2.1.5 Phenomenology

Phenomenology was both philosophy and methodology for this research (Creely et al., 2020). As the primary locus and topic of this study, phenomenological research aimed to reveal and describe lived experiences in order to gain understanding of the meaning of phenomena (Cilesiz, 2011). Thus my research focused on "richly describing the experiential essence of human experiences" (Tracy, 2020, p. 65) as this related to MDL and OEPr in teacher education.

Two central concepts in phenomenology are the notions of lifeworlds and intentionality (see Figure 1). Lifeworlds are described as the immediate experiences of what already exists, emerging from the world in its natural and emerging state (Tracy, 2020). The lifeworld is where the phenomena are experienced and lived (Vagle, 2018). In this research, this lifeworld included both the physical world of the participants' geographic localized ecologies and also their digital and electronic spaces described through *I-Technology-World* relationships (Ihde, 1978; Rosenberger & Verbeek, 2015). Intentionality was described as the meaning and "connections that emerge in relations, contexts, and across time" (Valentine et al., 2018, p. 463). The use of the word intentionality was not to be confused with the intent, purpose, aim, or plan to do something. For phenomenologists, intentionality described "the way humans are connected

Figure 1

The Phenomenon of Phenomenology



Note. Compiled and remixed from Ihde 2015; Rocha, 2015; Rosenberger & Verbeek, 2015; Vagle, 2018; Valentine et al., 2018; van Manen, 2014. Published under CC BY-SA-NC license (DeWaard, 2023).

meaningfully with the world" (Vagle, 2018, p. 126). Phenomenological researchers were aware of how "words, language, concepts, and theories distort, mediate, and shape raw experience" (Tracy, 2020, p. 65). Criticality and self-reflection were imperative considerations in phenomenological research (Tracy, 2020).

In order to fully understand the post-intentional phenomenological (P-IP) paradigm (Clifden & Vagle, 2020; Vagle & Hofsess, 2016) within which this research was framed, I first explored the differences between the transcendental phenomenology and the hermeneutic, existential phenomenological research paradigms, since these two perspectives are more often applied to phenomenological research. I then uncovered the third phenomenological paradigm and explained why post-intentional phenomenology (Vagle, 2018; Valentine et al., 2018) provided the best fit for this research.

2.1.5.1 Transcendental Phenomenology

Transcendental, also known as descriptive phenomenology was inspired by Husserl's philosophy of consciousness (Tracy, 2020; Valentine, 2018). How the research participant *knows*, or is consciously aware of some object, real or imagined, thus holding a '*consciousness of something',* was foundational when describing the "essence of a phenomenon or experience" (Valentine et al., 2018, p. 464). The researcher must set aside their biases or habits of seeing while conducting the research and data analysis. This was done through a process of bracketing or transcending previously conceived theory, experiences, and understandings. This removed the researcher's influence from the interpretation of the phenomenon (Tracy, 2020; Valentine et al., 2018). Since meaning was derived from the "intentional relation between subject and object" the researcher studied the *"of-ness"* of the phenomenon (Vagle, 2018, p. 39). The focus was on accurate and rich descriptions of the phenomenon as it was understood or known by the research participants.

For this research, the phenomenon under scrutiny was the MDL within OEPr of Canadian teacher educators. This research shifted away from transcendental phenomenology since I did

not ‘bracket’ or suspend my “habits of seeing” (Tracy, 2020, p. 65). It was not just the knowing or understanding of the phenomenon of MDL within an OEPr, as seen through a teacher educator’s experiences with MDL that interested me. It was the phenomenon of how participants’ MDL shaped micro-practices as an open educational practitioner that was the aim of this research.

2.1.5.2 Interpretive Phenomenology

Interpretive or hermeneutic phenomenology focuses on embodiment and *being* in the lifeworlds and intentions relating to a phenomenon and is grounded in the philosophies of Heidegger, Merleau-Ponty, and Gadamer (Valentine et al., 2018). This shift in phenomenology from *knowing* to *being* resulted from Heidegger’s ontological interest in how people gave subjective meaning to phenomena. Interpretive phenomenology was not just concerned with consciousness, but in how lifeworlds constituted intelligible structures (Vagle, 2018) and how these meanings were revealed through language and discourse, thus emphasizing the intentionalities within people’s stories as a form of sense-making (Tracy, 2020). Vagle (2018) applied the preposition ‘in’ to describe the ‘*in-ness’* of intentionality whereby the human subject is ‘in’ “intersubjective, contextual relationships” (p. 42). Bracketing was replaced by reflective and reflexive practices that ‘bridle’ or restrain the researcher’s positionality and perspectives on the phenomenon (Valentine et al., 2018). In this way, the researcher was not removed from the research, but openly acknowledged their assumptions and positionality while they shared their reflexive understandings of the phenomenon (Valentine et al., 2018).

Although a fuller presentation of interpretive phenomenological analysis (IPA) as outlined by Smith (2004) was beyond the purposes of this research, it was important to reveal three characteristic features of IPA – idiography, inductivity, and interrogation – that influenced post-intentional phenomenological research. IPA followed an idiographic research sequence, meaning that the researcher collected one case or participant’s story at a time, bringing it to a

degree of closure, before moving on to subsequent cases or conducting a cross-case analysis of themes for convergence or divergence (Smith, 2004). Since I conducted interviews and storying events simultaneously and interwoven in time and space, this excluded IPA as a research method.

Researchers following an IPA strategy inductively analyzed data and are open to unanticipated and emergent themes or topics as well as continuing to interrogate and illuminate extant literature (Smith, 2004). These characteristics may be evident in the research since my process included a fluidity to the coding and analysis that deductively generated themes and categories. I explored patterns within the whole-part-whole descriptions of the phenomena in conjunction with the interview process.

Although transcendental and interpretive forms of phenomenological theory are of interest, it is post-intentional phenomenology (P-IP) that provided the best fit for this research since I posit that the MDL of teacher educators fluent in OEPr will be gathered in a fluid, liminal, boundary crossing, and dynamic praxis that continually shifted toward an ideal of becoming open, becoming literate, becoming teacher educator. The next section explores P-IP as it related to this research.

2.1.5.3 Post-Intentional Phenomenology

Post-intentional phenomenology (P-IP) shifted the focus for my research from *being* to *becoming*, from "identifying invariant structures … toward exploring the various ways that phenomena are socially produced in context" (Valentine et al., 2018, p.466). Vagle (2018) applied the preposition '*through*' to describe how the lifeworlds and intentionality found in phenomena were permeable, malleable, non-linear and shifted over time. Intentionalities and lifeworld experiences were reciprocally circulated and produced by the human participants as well as the social systems, habits and practices found '*through*' the phenomena (Vagle, 2018). Theoretically, P-IP "takes place along the hyphen, the jagged edges of phenomenology and post-

structuralist ideas, where stories are in flux, where we enter into middles instead of beginnings or ends" (Vagle, 2015, p. 597). This notion of being hyphenated suited my research questions since I perceived that the phenomenon of media and digital literacies within an OEPr would have no beginning or ending.

This framed my understanding that knowledge of the phenomena, and the phenomenon itself, was fluid, always *becoming*, since knowing about lived experiences with MDL would be "changed to the extent that reality also moves and changes" (Horton & Freire, 1990, p. 101). P-IP researchers suggested that phenomena are not rigid, but were temporal and partial, since the focus of the research is on examining the essential features of the phenomenon "at a given point in time, for a given group of participants, contexts, or cultures" (Valentine et al., 2020, p. 466). Thus, post-intentional phenomenologists take into account the "multi-dimensionality, multi-stability, and the multiple 'voices' of things" (Ihde, 2003, p. 25) as well as the variant ways participants' lifeworlds emerged. It was through the notion of intentionality, or the "directional shape of experiences" (Ihde, 2012, p. 24), that I further determined P-IP was an appropriate theoretical framework for this research. P-IP was theoretically linked to connectivism (Siemens, 2018) in that intentionality was a "commitment to the idea of connection – and that the meaningfulness of living and the lifeworld resides in the connectivity among humans, things, ideas, concepts, conflicts, etc., not in humans or in things or in ideas alone" (Vagle, 2018, p. 128). This suited my research design.

Conceptually, a P-IP paradigm shifted away from the notion that there is a "brute reality out there – present and fixed – with an essence that can be both immediately perceived … *and* brought to light and expressed in language" (St. Pierre, 2013, p. 651). I considered how the phenomenon of media and digital literacy would be represented by transcendental illusions, contaminated by past, present, and future (St. Pierre, 2013; Vagle, 2018). For this research into MDL in the OEPr, I attended to St. Pierre's (2013) notion of the "materiality of linguistic and

discursive practice" (p. 652) where language and reality exist together. Theoretically, P-IP pushed me to consider where I needed to reject binary thinking about *becoming* media and digitally literate in favour of a logic of connection (St. Pierre, 2013; Vagle, 2018).

Clarity of the P-IP construct was gained through the Deleuzian conceptions of assemblage and lines of flight (Adkins, 2015: St. Pierre, 2013; Vagle, 2018) as both are seen as central to P-IP. Assemblages, described as the shapes of things, are concrete collections of materials that tend toward both stability and change (Adkins, 2015). Lines of flight are transitory (Adkins, 2015); exhibiting movements of fleeing, flowing, leaking, and eluding (Vagle, 2018) within the phenomenon being researched. Vagle (2018) describes three lines of flight afforded by P-IP which are helpful for this research: first, a "re-conception of the intentional connection" with a "focus on *how things connect* rather than on *what things are*" (Vagle, 2018, p. 129, emphasis in original) which emphasizes instability and partiality; second, re-conceiving of intentionality through a *both/and* perspective of individuals within their worlds, both agent and acted upon; and third, relationships and connections as being less linear, more transitorily multiple and shifting across "distances, intensities, and movements within and among things, relations, ideas, theories, and experiences" (Vagle, 2018, p. 131). These theoretical understandings suited my research design.

When I juxtaposed P-IP with Ellingson's (2014) conception of crystallization, I confirmed my thinking about how P-IP supported the notion of media and digitally literacy as an open educational practitioner. Rocha (2015) re-emphasized that P-IP research was conceived as an assemblage by describing the shifts in phenomenology as it moved from a focus on *objects*, on *being*, and on *giveness*, but added his own reduction with a focus on *offerings*. St. Pierre (2013) underscored P-IP as being "entangled, connected, indefinite, impersonal, shifting into different multiplicities" (p. 653).

As a P-IP researcher, seeking to find the stories of MDL within OEPr through lived experiences, I must "examine practices rather than going deep, looking for origins and hidden meanings that exist outside of being" (St. Pierre, 2013, p. 649). It would become evident through productions and provocations created with and without technologies, that the temporal, partial, and contextual features of ambiguous, emergent, and variant phenomena (Valentine et al., 2018) such as MDL in an OEPr might be revealed. Thus, my P-IP research would rely on gathering rich data from a variety of sources and from lived-experiences "meant to stand as testimony, bearing witness" (hooks, 1994, p. 11). In this research, proxies for teacher educators' MDL within their OEPr were revealed in writing, interviews, observations, media productions, discourses, and histories. Rocha (2015) referred to these as "offerings" (p. 6). In this way, the phenomena of media and digitally literacy as an open educational practitioner in Canadian FoE was understood as a "relation of possible meanings being shaped, produced, and provoked" (Valentine et al., 2018, p. 467) and as a "movement against and beyond boundaries" (hooks, 1994, p. 12).

For P-IP researchers, reflexivity requires a "dogged questioning of one's own knowledge as opposed to a suspension of this knowledge" (Vagle, 2018, p. 82). This involves continual attention to moments where connection/ disconnection became evident, where normality is assumed, where bottom lines are discovered, and where shock or insights emerge (Valentine, 2018). Research data is iteratively analyzed through wholistic, selective and detailed readings (van Manen, 2014) that shape and crystallize the facets found within whole, parts, meanings, particularities, and unique assemblages. It was in these crystallizing moments that I as a P-IP researcher used reflexivity to open the potentialities of turning to wonder (Rocha, 2015; Vagle, 2018). It was in these open moments when the lived experiences being researched created feelings of awe, perplexity, and surprise. In this way, the research and the writing of phenomenological research benefited from multi-modal expressions of visual, auditory,

language, images, art, video, or music (Vagle, 2018; van Manen, 2014). From this review of P-IP I confirmed that this philosophical framework was the best fit for this research.

2.2 Conceptual Frameworks

"I think that even though we need to have some outline, I am sure that we make the road by walking. ... I see this thing as just unfolding as we go along." (Horton & Freire, 1990, pp. 6–7)

The conceptual framework outlined the factors, constructs, variables, and relationships in the research design (Grant & Osanloo, 2014) and reflected the previously mentioned ontological and epistemic theoretical lenses. Just as Horton and Freire (1990) suggested, and in post-intentional phenomenological fashion, I allowed this research to unfold as I go – always in a state of *becoming*. In this section I explored conceptual understandings and literature relating to being a teacher educator, then examined the concepts relevant to OEPr, and concluded with an investigation into the concepts and literature surrounding media and digital literacies. These conceptual frameworks included a cursory link to trends toward globalization and pandemic related impacts, as these influenced teaching in faculties of education. At the end of the conceptual framework section, I provided a crystallizing reflection, as a visualization of these theoretical and conceptual frameworks, since this illuminated directions for the research design of this dissertation.

2.2.1 Teaching as a Teacher Educator in a Faculty of Education

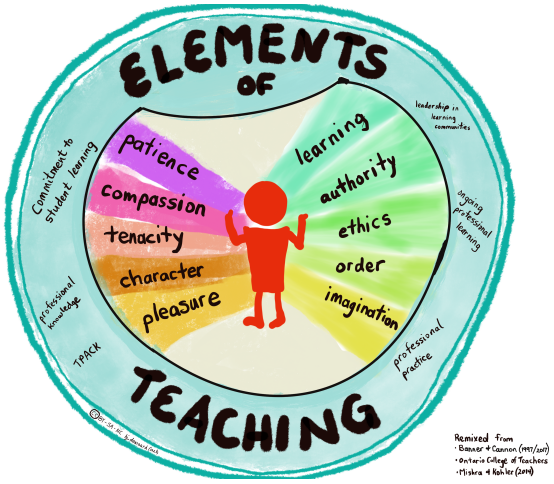
"Simply put, it is reasonable to assume that quality teacher preparation depends on quality teacher educators. Yet, almost nowhere is attention being paid to what teacher educators should know and be able to do" (Goodwin & Kosnik, 2013, p. 334).

Teaching is described as both art and science (Biesta, 2022; Marzano, 2007). Elements of teaching according to Banner and Cannon (1997/2017) included learning, authority, ethics, order, imagination, compassion, patience, tenacity, character, and pleasure (see Figure 2). Across the provincial education jurisdictions for kindergarten to Grade 12 (K-12) education, elements of

teaching practice are identified in the standards of practice and the ethical standards outlined for the profession (Alberta Education Office of Registrar, 2023; BC Teachers' Council, 2019; Ontario College of Teachers, 2020). Examining documents from Alberta, British Columbia and Ontario, I notice a range of attitudes, ethics, competencies, fluencies, and skills. When examining teaching standards, there may be similarities between K-12 and higher education. The teaching standards may be applied for verification and certification of graduates from a FoE course of study; however, these are not explicitly identified for the context of teacher education, nor are these standards connected to the practice of teaching by teacher educators. Although the connection between teaching, knowledge acquisition, learning, and literacy development is worthy of further investigation, this was not the primary focus of this conceptual investigation. Here I focused on the conceptual frameworks that grounded my investigation into media and digital skills, fluencies, competencies and literacies of teacher educators as these are experienced within an OEPr and defined the elements of a teaching practice.

Figure 2

Elements of Teaching



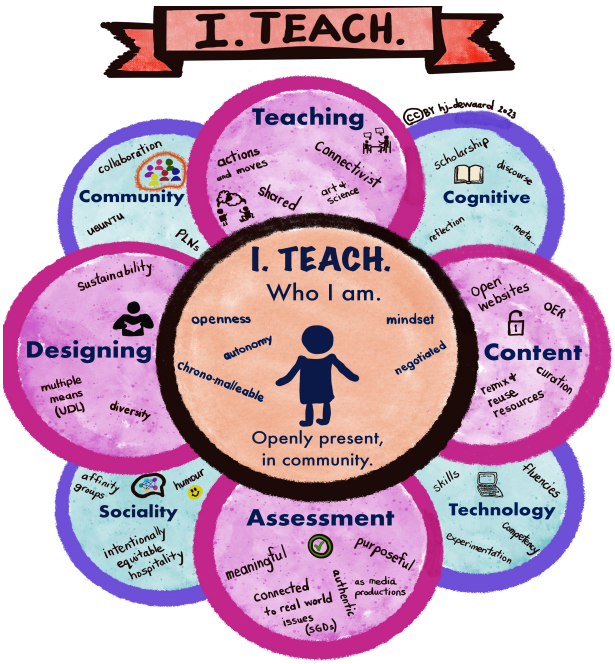
Note. Compiled and remixed from Banner & Cannon, 1997/2017; Koehler & Mishra, 2009; Ontario College of Teachers, n.d. Published under CC BY-SA-NC license (DeWaard, 2023).

As the statement by (Goodwin & Kosnik, 2013) illuminated there was an identified need for research into how TEds do what they do (Ellis & McNicholl, 2015) and delve into what it means to be a teacher educator. In this research, it is timely that teacher educators share their expertise as practitioners and theorists within open educational networks – making explicit what is often tacit and unspoken – sharing their knowledge, reflections and actions (Beck, 2016; Bennet & Bennet, 2008) outside of the traditional silos of academia. In this way teacher

educators may well showcase what they know and how they enact and embody the art and craft of teaching (Biesta, 2022; Marzano, 2007) (see Figure 3).

Figure 3

I. Teach.



Note. Compiled and remixed from Banner & Cannon, 1997/2017; Foulger et al., 2017; Palmer, 2005, 2016, 2017. Published under CC BY license (DeWaard, 2023).

With a focus on TEds as a critical component of FoE, it was essential to examine factors relevant to teacher education and specifically on research relating to teacher educators. Teacher education programs are referenced here as faculties of education (FoE). These are departments in higher education institutions providing a course of study in the discipline of education, sometimes referenced as teachers colleges or initial teacher education (Association of Canadian Deans of Education, 2017). Courses in the FoE are designed and delivered by teacher educators (TEds) to teacher candidates (TCs) who graduate to become licensed teachers, usually employed to work within the kindergarten to grade 12 (K-12) sector of education. For this research, FoE programs are differentiated from professional development courses, instructional design departments, or higher education centers for teaching and learning, where opportunities and support for the development of teaching skills and competencies may also be provided. These alternative learning opportunities are often informal or short-term and frequently come without the full range of courses, subject matter, or credentialing systems found in FoE.

An additional consideration for this research was the inclusion rather than exclusion of online courses course offerings and recognizing that open educational practices are not

constrained to being only online. Chickering and Gamson's (1987) insights into good teaching practices for undergraduate online education included actions that encouraged contact between teachers and students, developed reciprocity and cooperation within course contacts, used active learning techniques, provided timely feedback, emphasized time on task, communicated explicit and high expectations, and respected diversity in learner's talents and ways of learning. These elements may subsequently be seen as qualities of open educational practices.

Since education in Canada falls under provincial jurisdiction, initial teacher education programs in FoE are developed with limited national oversight. An undergraduate degree followed by a course of study in the education department is the most common design of FoE in Canada (Russell & Dillon, 2015). Some universities offer a concurrent education program whereby education related courses are incorporated into the undergraduate course of study. A graduate degree at the master or PhD levels of study should not be confused with initial teacher education, alternatively called the professional-years of study. For the purpose of this research, the focus was on initial teacher education, commonly completed within one to two years of study following an undergraduate degree (Kitchen & Petrarca, 2022).

Research literature revealed two key issues in teacher education. First, teacher education programs face the challenge of managing two competing demands - the 'theory-practice' and 'research-teaching' tensions (Cochran-Smith, 2005; Eisner, 2002; Zeichner, 2012). This episteme – phronesis dichotomy was an ongoing issue in teacher education (Pisova & Janik, 2011). In Canada, these tensions were the focus of many FoE reform initiatives (Russell & Dillon, 2015). As outlined by Russell and Dillon (2015), teacher education program design traditionally included the ***what*** and the ***how*** of teaching practice. The ***what*** focused on foundational elements such as subject specific methods, aspects of teaching such as behaviour management or assessment, as well as the sequencing of courses and the organization of practicum experiences. The ***how*** focused on the process of enacting teaching in the classroom

and the contexts of learning such as within a community of inquiry. Tensions emerged in FoE in a push/pull relationship for time, space, and attention to theory or practice. These tensions were exacerbated by recent pandemic-influenced teaching and learning constraints (Danyluk et al., 2022). The OEPr of TEds can reveal how working within and through these tensions occurs. Through actively 'thinking out loud' in blogs, social media, and open publications, particularly when sharing details of the *what, how, and why* they *do what they do*, teacher educators may reveal integrated literacy activities, strategies, and learning opportunities within their OEPr.

A second issue was the nature of those who teach in FoE. The term teacher educator (**TEd**) described those individuals tasked with teaching in the FoE. These TEds were seen as gatekeepers and lynchpins to the teaching profession and considered to be a critical factor in the quality and transformation of teacher education programs (Kosnik et al., 2015; Stillman et al., 2019; Voithofer et al., 2019). Yet it was noted that there is a highly transient nature of precarious employment within teacher education (Kosnik et al, 2015). Some TEds bring extensive practice from the field of education into their course designs. Other TEds may be new to the discipline, or become TEds as a result of an academic and research stream of study. Although teachers in the K-12 sector in many provinces are licensed to teach by a governing body, such as the Ontario College of Teachers, this is not a requirement for employment or teaching in higher education sectors such as FoE. Research noted that some TEds had extensive research experience, yet may have little or no formal knowledge of teaching practices. Although TEds were considered central to good teacher education, they received little attention (Vloet & van Swet, 2010). TEds were often overlooked, invisible, and rarely researched within the field of education (Crawley, 2018; Izadinia, 2014; Kosnik et al., 2015; Voithofer et al., 2019; Woloshyn et al., 2017). Perceptions suggested that TEds:

> should be able to handle themselves in their practice, to act in an effective way, to take care for themselves and to be physically, emotionally and cognitively balanced. They should

> have a realistic self-concept, concerning who they are, what they are able to do and how they want to develop themselves, especially when coping with educational innovations. … They should have insight into their personal experiences, feelings, values and motives, and gain self-knowledge about processes of their identity development, construction of meaning and their professional development (Vloet & van Swet, 2010, p. 150).

With rapid changes in media and digital technologies impacting the preparation of teachers in FoE, there were increasing demands on teacher educators to improve outcomes (Buss et al., 2018; Garcia-Martin et al., 2016). Research and change efforts in FoE included: a) self-study (Hordvik et al., 2020; Kosnik et al., 2015); b) the infusion of technology, pedagogy, and content knowledge (TPACK) frameworks (Allen & Katz, 2023; Jaipal-Jamani et al., 2018; Voithofer et al., 2019); c) the application of participatory teaching (West-Puckett et al., 2018); d) networking and collaborative teaching and learning (Heldens, 2017; Lohnes Watulak, 2018; Oddone et al., 2019); e) digital literacies and digital citizenship (Choi et al., 2018; Nascimbeni, 2018); and f) open educational practices (Albion et al., 2017; Kim, 2018). Recent research showed some of the issues and opportunities TEds face when digital literacies were infused or integrated within Canada's teacher education programs (DeWaard, 2022). Changes to FoE programs are politically driven, as suggested by the US Department of Educational Technology 2016 report on *Advancing Educational Technology in Teacher Preparation: Policy Brief* (Stokes-Beverley & Simoy, 2016) calling upon "leaders of teacher preparation programs to engage in concerted, programmatic shifts" (p. 4). The political impact on teacher education is evident in governmental reforms that drastically changed the organization and application of initial teacher education programs in Faculties of Education in Ontario (Kitchen & Petrarca, 2015).

Although not explicit to MDL or OEPr research, this research was informed by the *Teacher Educator Technology Competencies* proposed by Foulger et al., (2017) in their exploration of the technological practices of TEds. These teacher educator technology

competencies established a foundational set of skills and attributes to support self-reflection and professional development (Foulger et al., 2017). Subsequent research examined these competencies in practice (Thomas et al., 2019) but explicit connections to MDL within OEPr of TEds in FoE have yet to be made. Allen and Katz (2019) proposed that teacher educators were positioned to impact the future of OEPr within K-12 education. With this in mind, this research focused on the nexus between MDL and OEPr found in teacher educators in FoE in Canadian contexts, recognized the complexity of teaching in teacher education, and hinted at a life-long learning approach to teacher education (Livingston, 2014, 2017).

2.2.2 Open Education

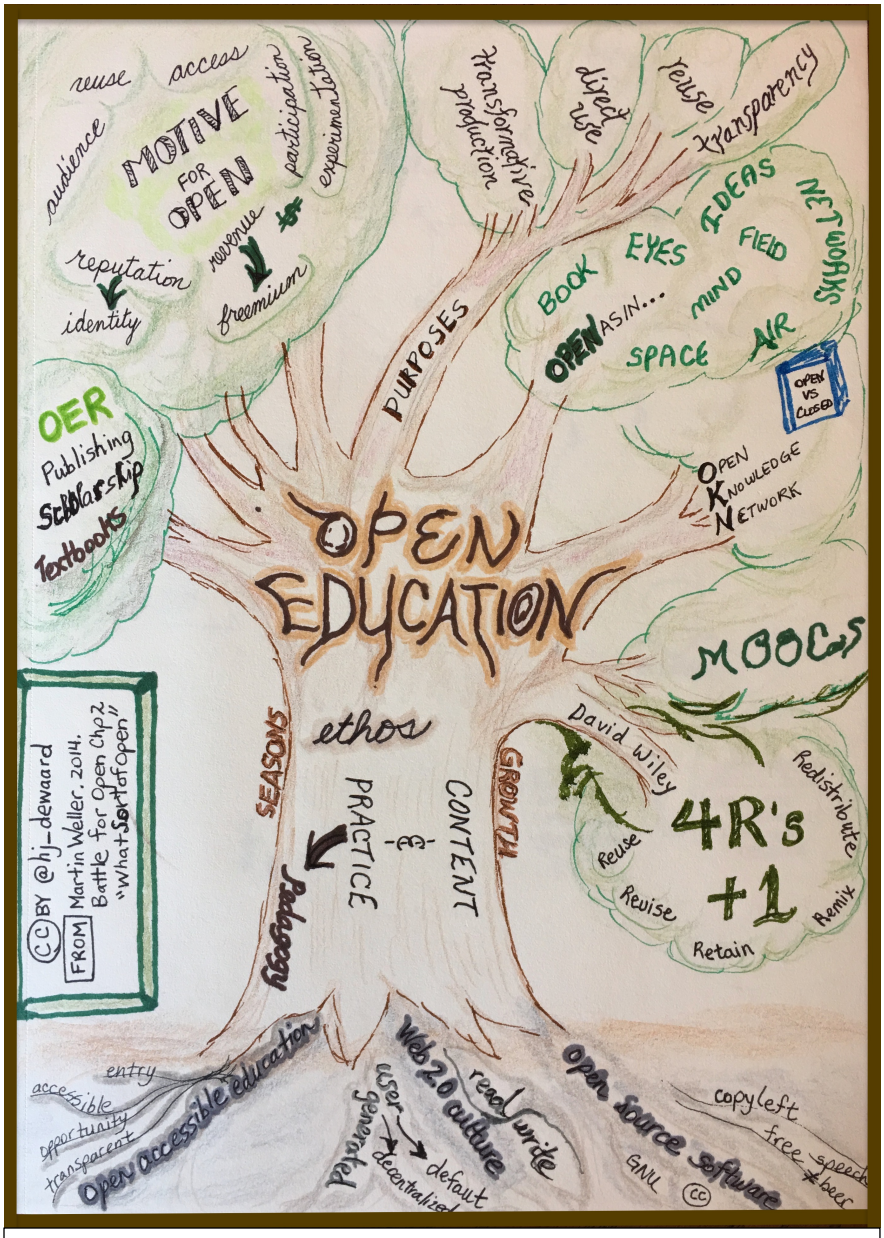
"An open mind leaves a chance for someone to drop a worthwhile thought in it." Mark Twain

Just as envisioned by author Mark Twain, the premise and promise of open education (OE) included the "simple and powerful idea that the world's knowledge is a public good and that technology in general and the Web in particular provide an extraordinary opportunity for everyone to share, use, and reuse knowledge" (Geser, 2012). OE moved beyond the conception of open with a focus on cognition, as Twain's quote suggested. Openly available technologies, education and scholarship are a "shared enterprise, a communal act" (Blomgren, 2018, p. 64). Weller (2014) described open education (see Figure 4) and suggested it has shifted from the periphery to mainstream academic practice. Over time, the term 'openness' shifted to mean many things when considered from an educational perspective, including "access, flexibility, equity, collaboration, agency, democratization, social justice, transparency, and removing barriers" (Zawacki-Richter et al., 2020, p. 321).

From this vision of OE emerged Wiley's (2014) application of the five R's of reuse, revision, remixing, retention, and redistributing resources within pedagogical practices, and Wiley and Hilton's (2018) conception of OER-enabled pedagogy shaped possible boundaries around the conception of how educators approach teaching from an open perspective. *The Cape*

Figure 4

Open Education



Note. Compiled and remixed from Weller, 2014. Published under CC BY license (DeWaard, 2017).

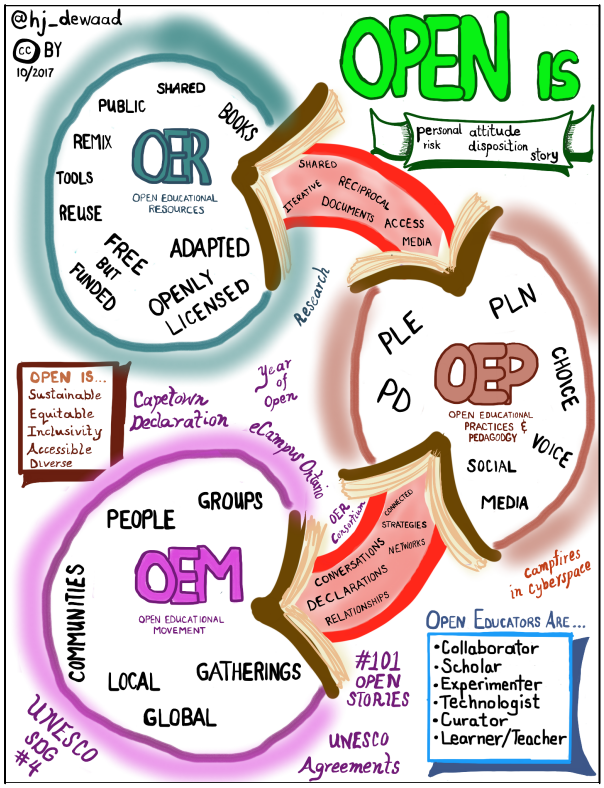
Town Open Education Declaration (2007) suggested that, beyond using OER, open education included "collaborative, flexible learning and the open sharing of teaching practices that empower educators to benefit from the best ideas of their colleagues … to include new approaches to assessment, accreditation and collaborative learning" (*The Cape Town Open Education Declaration*, 2007, paragraph 4). The following conceptualization of open education defined my research work:

> Open education is a way of carrying out education, often using digital technologies. Its aim is to widen access and participation to everyone by removing barriers and making learning accessible, abundant, and customisable for all. It offers multiple ways of teaching and

learning, building and sharing knowledge. It also provides a variety of access routes to formal and non-formal education, and connects the two (Inamorato dos Santos, 2019, p. 6). This description was presented in the UNESCO document *Opening Up Education* where a ten-dimensional framework outlined six core dimensions (access, content, pedagogy, recognition, collaboration, and research) supported by four transversal dimensions (strategy, technology, quality, and leadership) (Inamorato dos Santos et al., 2016). This framework was helpful in understanding the construct of open education since it is, and continues to be, a contested concept. A clearly defined boundary of open education was not possible, as posited by Pomerantz and Peek (2016), since more than fifty shades of open can be delineated by OE researchers and practitioners.

Figure 5

Open is



Note. Compiled and remixed from Couros, 2006; Farrow, 2016; Hegarty, 2015; Pomerantz & Peek, 2016; Thornburg, 2004. Published under CC BY license (DeWaard, 2017).

Open education predates the ubiquitous use of digital technologies (Noddings & Enright, 1983). OE research was not constrained or limited to digital resource production, digitally enabled teaching and learning, or electronic distribution of learning materials. However, for this research, digital was an essential component of open education. Cronin and MacLaren (2018) explored the extensive reach of open education conceptions to describe "not just policy, practices, resources, curricula and pedagogy, but also the values inherent within these, as well as relationships between teachers and learners" (p. 217). There are many conceptions, definitions, and visions for open education (see Figure 5).

These are related to open educational resources (Bayne et al., 2015; Rolfe, 2012; Weller, 2014); open scholarship (Stewart, 2015; Veletsianos, 2015; Weller, 2016); the open education movement (Alevizou, 2015; Couros, 2006; Farrow, 2016b; Rolfe, 2017); open pedagogies (Armellini & Nie, 2013; Hegarty, 2015; Paskevicius & Irvine, 2019; Wiley & Hilton, 2018); and open education practices (Couros, 2010; Cronin & MacLaren, 2018; Paskevicius, 2017; Roberts et al., 2018; Roberts, 2019; Stagg, 2017).

Although the dominant research discourse examined open educational resources (OER), my research focuses on the transformative potential of OEPr, which is under-represented in scholarly work, particularly in the field of education (Cronin & MacLaren, 2018; Nascimbeni, 2018; Paskevicius, 2018; Roberts, 2019; Tur et al., 2020).

For clarification, I differentiated between open education practices using **OEPr**, rather than the usually applied acronym **OEP** which is commonly applied to both open pedagogies and open practices. In this way I hoped to add to the evolution of this term and provide clarity in naming this concept. In the next sections I defined OER, explored a framework for open pedagogy, and elaborated on conceptions of OEPr.

2.2.2.1 OER: Open Resources

Open educational resources (OER) are free, openly accessible, openly licensed educational materials (text, media, and digital assets) that can be used for teaching, learning, research, and other purposes (UNESCO, 2019). The term OER encompassed publicly accessible materials available to anyone to reuse, remix, revise, improve and redistribute (Wiley & Hilton, 2018) under license formats that frequently included Creative Commons licensing frameworks. The use and application of OER has transformative potential when the benefits of sharing across institutions and countries are fully realized (McGreal, 2017). OER application and production relied on individuals in educational settings to become open in the ways “they produce and share

knowledge, in the way they teach and assess students, and in collaborating with others" (Inamorato dos Santos, 2019, p. 7).

Since the *Cape Town Open Education Declaration* in 2007 and *2012 Paris OER Declaration* (UNESCO, 2012) the United Nations and UNESCO have advocated and promoted the use and creation of OER (Hodgkinson-Williams & Gray, 2009) to uphold open education initiatives particularly in the support of the SDGs in education (UNESCO, 2012b). In 2017, the *Ljubljana Action Plan* (UNESCO, 2017) provided direction for building capacity, ensuring inclusive and equitable access, and developing sustainability models for the development of policy and environments for OER (Jožef Stefan Institute Centre for Knowledge Transfer in Information Technologies, 2020). These directions coincided with UNESCO's plan for sustainable development goals specific to education (CICAN, 2020).

In 2019, the UN General Conference adopted a recommendation that outlined five areas of action for OER: a) build capacity to create, access, re-use, adapt and redistribute OER; b) foster supporting policies; c) inspire inclusive, accessible, and equitable OER; d) develop models to sustain OER; and e) accelerate international teamwork (UNESCO, 2019a). This sets a global direction for OER to be recognized and supported as an area for growth within each country. Here in Canada, the development of OER and open education relies on provincially funded educational initiatives. Pan-Canadian organizations helped to open up the traditionally siloed educational K-20+ sector (Canada's Open Education Initiatives, n.d.). Networks of educators built collaborative OER as part of course work, with students as active agents of information generation (Brown et al., 2022; O'Byrne et al., 2014; Robertson et al., 2012). For this research, the primary focus was not on the production of OER but rather the shift in teaching practices that occurred when TEds included the use, creation, or assessment of OER.

2.2.2.2 OEP: Open Pedagogy

Open educational pedagogy (OEP) is often conflated or confused with conceptions of open educational practices (OEPr). Finding the edges of the concept of OEP helped clarify the conception of OEPr that was essential to my research. Although neither 'open' or 'pedagogy' requires the use of digital technologies, the constraint I applied included the condition of electronic or digitally enabled web-based tools and resources. The use of OER is not a required condition within this conception of OEP, but making use of OER that are licensed for remix and reuse are often considered part of a pedagogical design. For this research, I considered open pedagogies (OEP) as a subset encompassed within the broader concept of OEPr.

OEP are sometimes referred to as open teaching (Couros, 2010; Nascimbeni & Burgos, 2016) and are defined by teaching and learning habits, facilitation and support by open educators, the making or using of OER, engaging students in creating OER, and the sharing of accessible professional materials (Cronin, 2017; Farrow, 2017). As shared by McAndrew and Farrow (2013), the *International Council for Open and Distance Education* declared OEP to include the creation, use and repurposing of quality OER that is supported by institutional policies. Veletsianos (2015) distinguished between OEP licensing and OEP sharing cultures, relating to making artifacts or activities to engage with others. Alternatively, Bali et al. (2020) analyzed ways that processes in applying OEP might be thought of as being socially just (see Figure 6). Werth and Williams (2022) contributed a value-laden framework to conceptions of OEP since education is a value-laden enterprise. Values such as transparency, sharing, personalizing learning, learner empowerment, deconstruction of traditional power structures, and collaborative knowledge construction were associated with open design, content, assessment, and OER-enabled pedagogies (Werth & Williams, 2022; Wiley & Hilton, 2018). Interestingly, Tietjen and Asino (2021) contended that definitions of OEP were devoid of any consideration or

inclusion of conversations about pedagogy.

Open pedagogy is further defined as a:

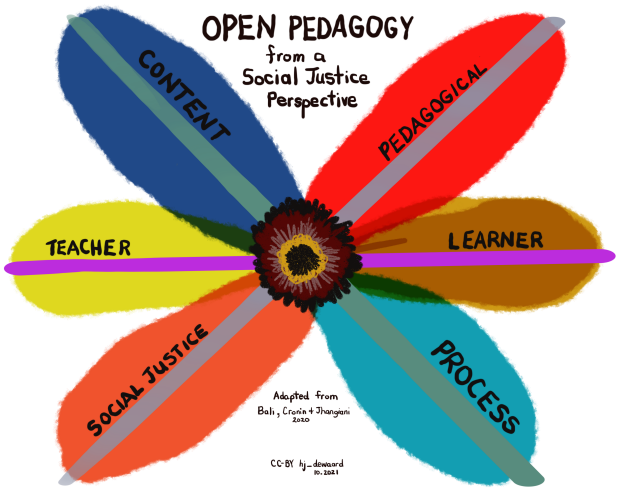
> site of praxis, a place where theories about learning, teaching, technology, and social justice enter into a conversation with each other and inform the development of educational practices and structures. This site is dynamic, contested, constantly under revision, and resists static definitional claims. But it is not a site vacant of meaning or political conviction (Jhangiani & DeRosa, 2018).

This definition suggested an evolving understanding of what open pedagogy means and pointed toward the praxis/practices in education that enable openness which included a social justice perspective (Bali et al., 2020b) (see Figure 6). In this way, pedagogy moved beyond the collection or distribution of educational 'stuff' and shifted toward an orientation, a "quality held by educators themselves", and a description of an educational identity (Tur et al., 2020, p. 4).

Hegarty (2015) explored open pedagogies by applying eight attributes - learner generated, connected community, peer review, participatory technology, innovation and creativity, sharing ideas and resources, people openness and trust, and reflective practice. These attributes relied on digital tools and resources but also envelop the skills and attitudes of educators and learners (Hegarty, 2015). Notions of open pedagogies brought forward of a high degree of sharing and authentic, agentic action into learning spaces but relied on learner self-regulation and learning needs (Hegarty, 2015). Educators who enacted

Figure 6

Open Pedagogy



Note. Compiled and remixed from Bali et al., 2020; Lambert, 2018. Published CC BY license (DeWaard, 2021).

open pedagogies provided openly accessible, openly managed, socially engaging, experiential, and scaffolded learning events and assets as co-facilitators and catalysts for learning (Ehlers, 2011; Hegarty, 2015). In considering OEP as a learning design process Roberts (2022) applied Hegarty's OEP attributes to suggest pathways and interventions as supports for a continually reflective teaching practice that brought a deeper understanding of OEP in practice.

The OEP framework developed by Tietjen and Asino (2021) provided five elements that connected to this dissertation research. First, OEP was viewed as poly-vocal, seeking and thriving on a diversity of cultural voices within knowledge-building networks. Second, OEP emphasized a participatory culture, accepting contributions from around the world and where learners contributed to global knowledge. Third, OEP used and applied a common and open licensing system to contribute to the learning of others. Fourth, OEP connected to external, non-traditional and informal learning spaces. Fifth, OEP encouraged collaboration by structuring communities of practice since this was viewed as a means to support others through crises situations (Tietjen & Asino, 2021). These elements may connect to the lived experiences of the participants in this research.

Paskevicius and Irvine (2019) applied structuration theory to their investigation into the OEP of higher education in British Columbia, finding approaches to openness were influenced by the selection of source materials, the compilation of found and created resources, and the use of open tools and resources to communicate and share openly. The three approaches included the explorations of OER, designing materials and artefacts with openness in mind, and a focus on open publications of scholarly work. They discovered a diverse arrangement of openness along a continuum from closed access without open design to shared and created with open design (Paskevicius & Irvine, 2019). Challenges and issues included a lack of time, lack of program-wide integration planning, and the need for clear “delineation of boundaries for terminology so that the semantics around access and pedagogical strategies are clear” (Paskevicius & Irvine,

2019, p. 17). These findings supported my research as there may be recognizable similarities with the open pedagogical practices of TEds in Canadian FoE.

2.2.2.3 OEPr: Open Practices

Despite more than a decade of developing conceptualizations of OEPr, as shaped by social, cultural, geographic, and economic factors, there are still no clear definition of what it means to practice open education (Bozkurt et al., 2019; Cronin & MacLaren, 2018). Broadly speaking OEPr encompassed (a) open sharing of learning and instructional design, (b) collaborative development of open educational content and resources, (c) open and accessible co-creation and delivery of learning activities, and (d) the application of shared peer and collaborative assessment and evaluation practices (Bozkurt et al., 2019; Cronin & MacLaren, 2018; Nascimbeni & Burgos, 2016; Paskevicius, 2017; Wiley & Hilton, 2018). Some of these elements of an open educational practice (see Figure 7) suggested increased transparency, improved collaboration, and the democratization of educational endeavours (Kimmons, 2016; Steiner, 2018). OEPr continued to be shaped by a philosophy about teaching that emphasized "giving learners choices about medium or media, place of study, pace of study, support mechanisms, and entry and exit points" (Bozkurt et al., 2019, p. 80).

OEPr was more narrowly defined by identifying skills and abilities educators applied when opening their teaching and learning environments by removing barriers to learning (Cronin, 2017; Nascimbeni & Burgos, 2016). Paskevicius (2017) defined OEPr as "practices where openness is enacted within all aspects of instructional practice; including the design of learning outcomes, the selection of teaching resources, and the planning of activities and assessment" (p. 127). For my research, I explored the OEPr of teacher educators as they engaged and participated, created and networked, selected learning objects, and/or applied Creative Commons licensing (Paskevicius, 2017; Watt, 2019).

Nascimbeni and Burgos (2016) attempted to identify and measure the qualities of an open

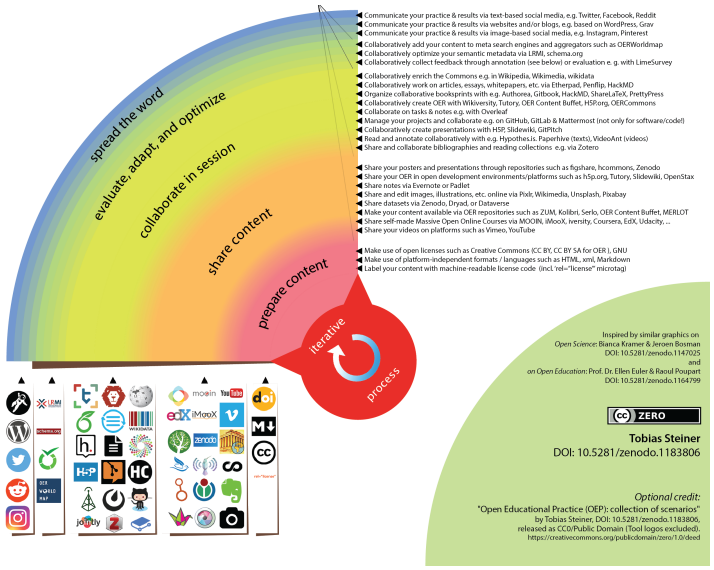
educator using their *Open Educators Factory* which examined elements of teaching practice such as openly designing learning, developing and using open content, teaching openly, and applying assessment that shifts beyond the notion of a disposable assignment (Nascimbeni & Burgos, 2016; Paskevicius, 2018; Wiley & Hilton, 2018). This description added characteristics of an open educator:

> An Open Educator chooses to use open approaches, when possible and appropriate, with the aim to remove all unnecessary barriers to learning. He/she works through an open online identity and relies on online social networking to enrich and implement his/her work, understanding that collaboration bears a responsibility towards the work of others (Nascimbeni & Burgos, 2016, p. 4).

Tur et al., (2020) suggested a different focus when becoming an open educator and enacting an OEPr. Applying a threshold concepts lens, Tur et al., (2020) described OEPr as "capabilities, skills, experiences or practices … which might also indicate ways of thinking, practicing and being which act to signal membership of, or changing status within, a community of practice" (p. 5). Tur at al., (2020) suggested a threshold that bounds an OEPr over which a practitioner must cross. OEPr required transitions whereby an educator undergoes a process of ***becoming***, through rights-of-passage involving doing (experiences), sense making (knowledge) and identities (being) that are transformative, troublesome, and liminal (Tur et al., 2020). For my

Figure 7

OEPr Collection of Scenarios



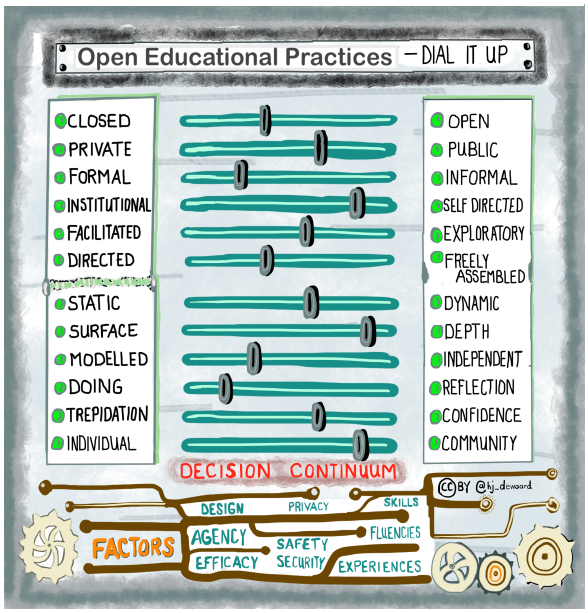
Note. Compiled and remixed by Tobias Steiner. Published under CC Zero license. (DOI: 10.5281/zenodo.1183806)

research, this coincided with Gee's (2017) notion of "being" and "becoming" as a means of highlighting this internal state in becoming an open educator.

To further distinguish between OEPr as an external action or event to one that focused on internal qualities (see Figure 8). Cronin's (2017) clarification of openness as “individual, complex and contextual” (p. 18) was a helpful starting point. This conception of OEPr brought to the forefront the individual to whom the open practice matters as an educator, situated within the contextualized, complex spaces where personal identity is continually negotiated, and where personal and connected decisions are made, both within and from outside educational contexts (Cronin, 2016). This is where I reconceptualized an OEPr as becoming, reframed as individual, online identity building, hospitable, negotiated and reflective.

Figure 8

Dial it Up



Note. Compiled and remixed from Beetham et al., 2012; Cronin, 2017; Cronin & MacLaren, 2018. Published under CC BY license (DeWaard, 2018).

I reflected on a holistic conception of a teaching practice as open as I juxtaposed Cronin’s (2016) notion of openness with the writing of Parker J. Palmer (2017) who described three entanglements in teaching. First was the content or subject matter that must be managed. Second was the complexity brought to the teaching environment as embodied in each student. The third suggested the greatest challenge that comes from within each educator since “we teach who we are” (p. 2). Palmer (2017) stated:

> Teaching, like any truly human activity, emerges from one’s inwardness, for better or worse. … The entanglements I experience in the classroom are often no more or less than

> the convolutions of my inner life. Viewed from this angle, teaching holds a mirror to the soul. If I am willing to look in that mirror, and not run from what I see, I have a chance to gain self-knowledge—and knowing myself is as crucial to good teaching as knowing my students and my subject (p. 3).

As I deeply considered OEPr, I realized it is into open education spaces that TEds project their inner selves, as they become both a mirror and a window (Style, 1988) for others, and where their teaching was openly displayed in all the layers, negotiations, tasks, actions, and care encompassed within the art and act of teaching. I reflected that, in open educational contexts, OEPr is a manifestation of everything TEds ***are*** and ***do*** as a teacher. The digital technologies and resources they selected, used, and integrated into their courses mirrored their personality, persona and identity, both physical and digital. TEds revealed, either physically or virtually, their identity and selfhood since "good teaching cannot be reduced to technique; good teaching comes from the identity and integrity of the teacher" (Palmer, 2017, p. 4).

Thus, I defined OEPr as the sum total of an educator's internal ethos, acts of hospitality, and ways of being open, along with pedagogical decisions and shared scholarship. OEPr requires continual and intentional negotiations in education related spaces and places, making decisions that impact student learning, and presenting opportunities to explore open assessments, integrate open technologies, and engage with open communities (see Figure 8). One area that required further exploration was how OEPr are impacted or influenced by skills, fluencies, competencies and engagement with media and digital literacies. The concepts of MDL are explored in the next section.

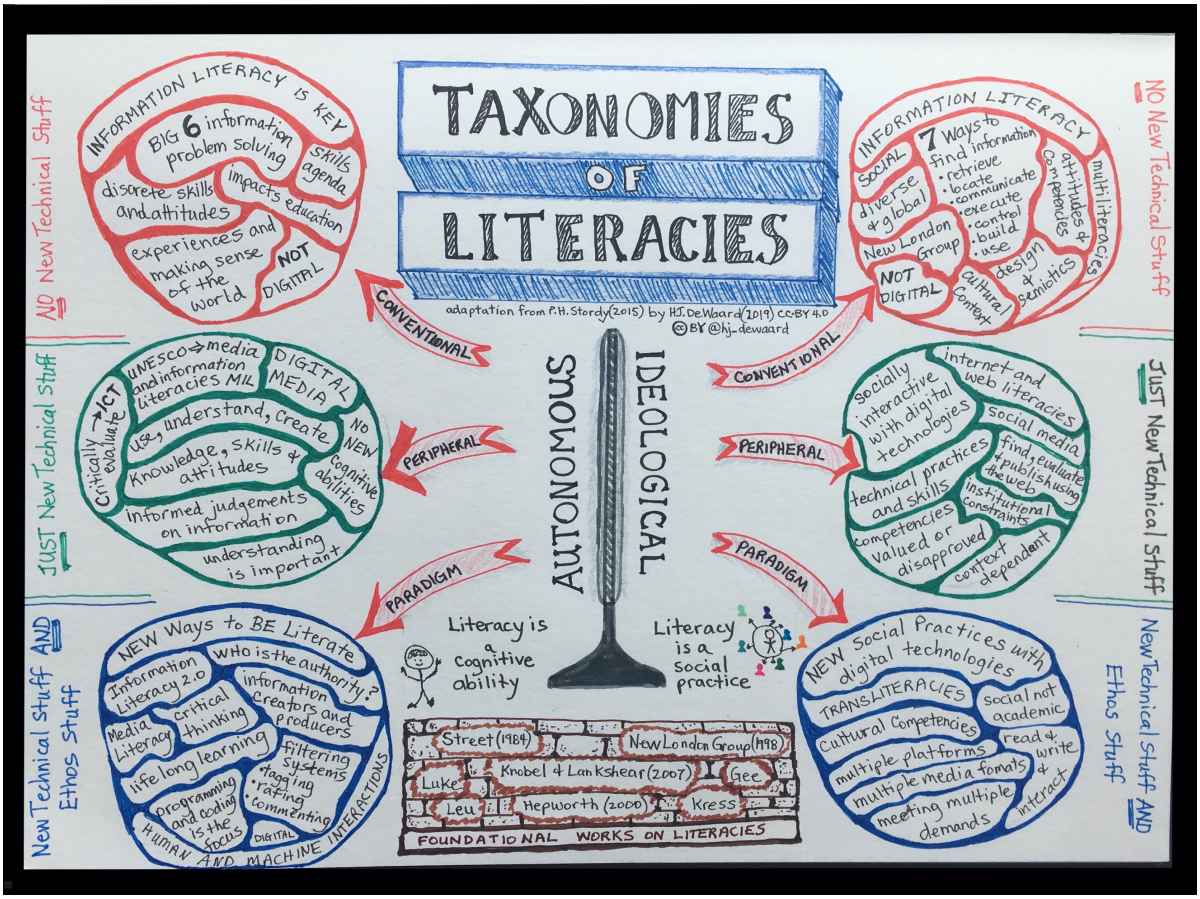
2.2.3 Literacies

Literacy is a human process of making sense of our world, binding our understanding and relationships to each other and our contexts using symbols and communication technologies. Literacy is found in the "relationship between human practices and the production, distribution,

exchange, refinement, negotiation and contestation of meaning" (Lankshear & Knobel, 2007, p. 2). Within this relationship building process there is a reciprocity between practice and meaning-making, between context and language, and between reading and writing (Lankshear & Knobel, 2007).

Figure 9

Taxonomies of Literacies



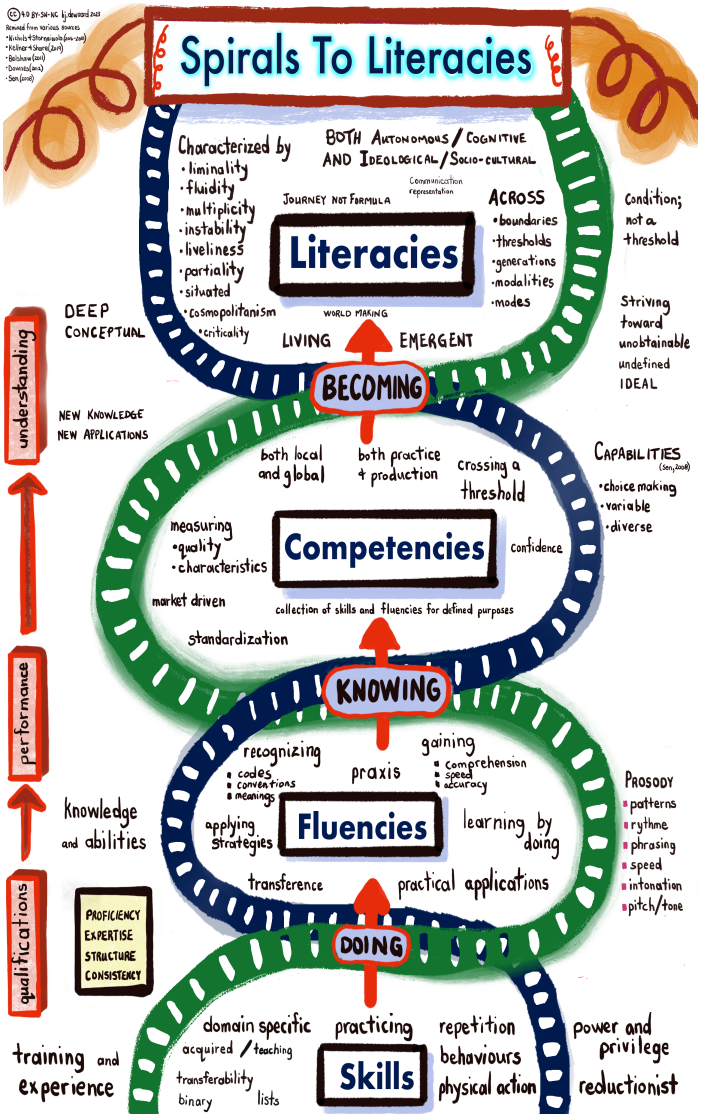
Note. Compiled and remixed from Stordy, 2015. Published under CC BY license (DeWaard, 2018).

Stordy (2015) examined literacy/ literacies research, grounded in the works of Gee (2009), Kress (2010), Lankshear and Knobel (2007), Street (2003), and The New London Group (1996) to create a taxonomy that encompassed a multitude of definitions and variations of relevant terms. This taxonomy included both an autonomous perspective outlining psychological cognitive definitions and an ideological perspective relating to socio-cultural approaches that

explicates distinctions initially made by Street (2013) when defining literacy/literacies. Stordy (2015) differentiated these into those literacies that integrated no-or-few digital technologies (conventional), those that incorporated new technical elements (peripheral), and those literacies that assimilated new technical stuff with new 'ethos stuff' (paradigm), as further described in the *Taxonomy of Literacies* (see Figure 9).

Figure 10

Spirals To Literacies



Note. Compiled and remixed from Belshaw, 2011; Downes, 2012; Hoechsmann & Poyntz, 2012; Kellner & Share, 2019; Nichols & Stornaiuolo, 2016, 2017, 2018, 2019, 2021. Published under CC BY-SA-NC license (DeWaard, 2023).

The taxonomy was grounded in literacy research and provided a working definition of literacies that "captures the complementary nature of literacy as a cognitive ability and a social practice" (Stordy, 2015, p. 472). Although Stordy (2015) acknowledged the challenges and limitations of this framework, and recognized that the borders between these concepts are fuzzy and permeable, this taxonomy supported the reframing of literacies in a way that clarified understanding necessary for this research. Missing in this definition of literacies is the entanglement of practices with cultural capital or cultural awareness. I recognize and acknowledge my intentional omission of conceptions of neutrality and power structures inherent within the social and political

values often attached to literacy/ literacies practices (Frau-Meigs, 2017) as these are beyond the scope of this research and would further complicate the intended focus on the lived experiences of teacher educators' media and digital literacies in their open educational practice.

Literacy terminology is frequently confused or conflated with notions of skills, fluency and competency. For this research, I regarded these as different conceptions (see Figure 10). Fluencies encompass the ability to speak, read, and write in a given language quickly and easily. Competency is defined by having skills and abilities to do a job ("Competency," OED Online; "Fluency," OED Online). These definitions are not the same thing, but can be considered to be subsumed within the broader term of *literacy*. This clarification is made here since research applies these terms interchangeably. For this research there is a clear spiraling distinction between conceptions of skills, fluencies, competencies and literacies (see Figure 10).

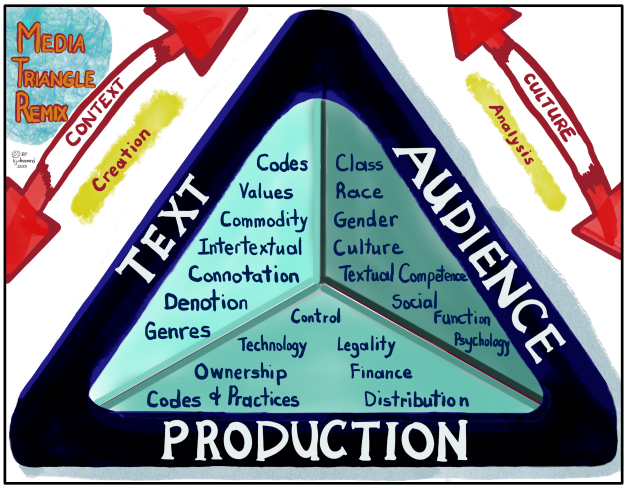
2.2.3.1 Media Literacy

Media literacy, from an autonomous stance, is defined as the ability to access, analyze, use, create, and evaluate information using a variety of communication formats (Baker, 2016; Hobbs, 2019; Rogow, 2019). The process of critical inquiry and reflection are central to being media literate (Grizzle et al., 2013) since "media literate people apply their skills to all symbol-based communication, irrespective of message" (Rogow, 2019, p. 122). These messages are bound by the types of media texts (print, visual, audio, digital) used to create and communicate (Baker, 2016; Hobbs, 2017). Media literacy involves examining the semiotics and symbolism of text messages as part of a meaning-making inquiry (Gee, 2015). The Association for Media Literacy provided a framework outlining eight essential concepts that guided understandings about media literacy. This framework and the Association for Media Literacy media literacy triangle remix (see Figure 11) are helpful in this research.

From an ideological stance, media literacy shifted beyond encoding and decoding media texts to engage in meaning making within socially, politically, and culturally contextualized media consumption and production spaces (Baker, 2016; Hobbs, 2017; Hoechsmann, 2019; Hoechsmann & Poyntz, 2012). Media literacy was described as a process of becoming (Gee, 2017) that is networked (Ito et al., 2010; West-Puckett et al., 2018), participatory (Jenkins et al., 2009), discursive (Gee, 2015), and complicated (boyd, 2010). Within teacher education, these media related processes may become evident in the lived experiences of MDL that occur with the OEPr of teacher educators.

Figure 11

Media Triangle Remix



Note. Compiled and remixed from Association for Media Literacy, Ontario. (https://aml.ca/). Published under CC BY license (DeWaard, 2023).

UNESCO combined media and information literacies (MIL) into a singular concept that encompassed and combined with other literacies such as computer, internet, digital, library, news, media and information literacies. This MIL framework outlined five laws of MIL (Grizzle & Singh, n.d.) that are presented in a matrix with three components (access, evaluate, create) and included competencies and performance indicators that can be applied to individual teacher's practices and FoE at the organizational level.

Additionally, media literacies included categories such as remix literacies (Hoechsmann, 2019), critical media literacies (Kellner & Share, 2019), and conceptions of educommunication (DeWaard, in press). Remix literacies, considered both autonomous and ideologic, are described as "the capacity to communicate – drawing on a number of multiple modalities and knowledges – needed for broad participation in civic, professional and cultural life" (Hoechsmann, 2019, p. 94). Critical media literacies are constituted by a "specific body of knowledge and set of skills,

as well as a framework of conceptual understandings" (Kellner & Share, 2019, p. 8) that includes co-construction within social contexts, examining semantics relating to mediums used, understanding contextual media messages, challenging bias and dominant hierarchies, purpose of media messages, and media cultures as sites of struggle. What critical media literacy provided was a closer examination of the protectionist versus permissive perspectives when integrating media literacies into teaching and learning contexts.

A contrast to media literacies that are prominent in North American contexts includes the concept of educommunication found in Latin American education contexts which breaks from the dominant literacies focus. As defined by Oliveira Soares in 2003 and translated into English, educommunication is a:

> set of actions inherent to planning, implementation and evaluation of processes, programs and products destined to create and strengthen communicative ecosystems in educational spaces, improve the communicative coefficient of educational actions, develop the critical spirit in users of mass media, adequately use information resources in educational practice and expand people's expression capability (Freitas & Ferreira, 2020, p. 57).

Educommunication was further framed by the Latin American notion of '*lo popular*' that focused, not on popular culture, but on the narratives '*of the people*' as mediations of media practices in everyday experiences (Rincon & Marroquin, 2020). This approach incorporated media practices, often applying electronic or low-bandwidth digital technologies to educate, communicate, or debate local initiatives and current issues in communities. Educommunication suggested an end to the division between receivers and emitters of mass media (Aguaded & Delgado-Ponce, 2019; Torrent & Aparici, 2010). With this contextual framework outlined, I noticed the connections to my research design.

2.2.3.2 Digital Literacy

Digital literacies are defined as the skills and fluencies that people and groups harness as they interact with digital communication technologies to compose meaning within social, educational and occupational practices (Stordy, 2015). When considering digital literacies from an autonomous perspective, conceptions relate to an individual's skills, fluencies, and competencies with digital technologies and web-based production. Skills and fluencies focus on the mechanics of how to use digital technologies, and knowledge related to the information required and used when manipulating digital resources. Competencies broadly covered knowledge, skills, attitudes and values (Ally, 2019; OECD, 2018). Competencies subsumed skills, fluencies and knowledge into a fuller conception that included attitudes and values (Spante et al., 2018). Competencies and literacies are frequently interchanged in the literature, depending on geographic contexts (Spante et al., 2018). Accordingly, some research suggested that digital literacy originated from a "skill-based understanding of the concept and thus relates to the functional use of technology and skills adaptation" (Spante et al., 2018, p. 7).

Nichols and Stornaiuolo (2019) provided an historical perspective on the complex intertwining of concepts surrounding media, information, and digital literacies and proposed a definition of digital literacy as an assemblage, a braiding together of concepts across lineages. This expanded as a model for digital literacy research and offered a map that was useful for this research – examining prescriptive and descriptive elements of technology, content, business models, ownership, governance, and users across socio-economic, socio-historical, and socio-technical domains. Although some of these facets may be reflected within the lived experiences with MDL of the participants, it was the exploration of core components, first introduced in the early 1990s that was of particular interest:

> Both then and now, digital literacy (and digital literacies) has remained centrally concerned with the ways *users* (e.g. individuals, groups, communities) leverage

> *technologies* (e.g. computers, software, mobile devices) to consume or produce *content* (e.g. textual, visual, multimedia, artifacts) (Nichols & Stornaiuolo, 2019, p. 19).

For my research, this brought clarity to digital literacy practices in OEPr where *users* are the TEds, *technologies* range across web and place-based resources, and *content* resides in open locations relevant to courses, research, and scholarship.

Ideologically, digital literacy is a "complex and socio-culturally sensitive issue" (Lemos & Nascimbeni, 2016, p. 2) that is grounded in issues of power and inequalities (Stornaiuolo & LeBlanc, 2016). These issues of power and inequalities were identified within global, regional, and local contexts and impacted how allocations of time, funding structures, and "power asymmetries in daily work and labour" (Stornaiuolo & LeBlanc, 2016, p. 264) were distributed to address digital literacy acquisition. Additionally, power and inequalities emerged in granular decisions and social interactions with / without educators and students in relation to how their digital literacies were applied to teaching and learning environments (Stornaiuolo & LeBlanc, 2016). To address issues of power and inequality Stornaiuolo and LeBlanc propose a scalar approach that involved a "layered simultaneity" (p. 283) of processes that upscale, downscale, anchor, embed, align, and connect when addressing gaps in access to resources and time.

Digital literacy was considered within social, collaborative, communication and sense-making actions and interactions using a variety of digital devices (Beetham et al., 2012; Belshaw, 2012; Lemos & Nascimbeni, 2016) and teaching strategies (Stornaiuolo & LeBlanc, 2016). Digital literacy was therefore defined as a dynamic process wherein the "creative use of diverse digital devices to achieve goals related to work, employability, learning, leisure, inclusion and/or participation in society" (Lemos & Nascimbeni, 2016, p. 2) are integrated into everyday life (Belshaw, 2012). Digital behaviors, practices, identities and citizenship, as well as wellbeing, are incorporated into this definition (Belshaw, 2012; Hoechsmann & DeWaard, 2015; Lankshear & Knobel, 2007; Spante et al., 2018).

The term critical literacy refers to the use of print and other media technologies to "analyze, critique and transform the norms, rule systems and practices governing the social fields of everyday life" (Luke, 2012, p. 5). Expanding on Luke's definition of critical literacies, Hinrichsen and Coombs (2013) examine components of critical digital literacies under components of decoding, meaning making, using, analysing, and persona. This framework further acknowledged power differentials, in order to strive for equitable access to diverse resources, and the reconstruction of transformative potentials (Hinrichsen & Coombs, 2013; Spante et al., 2018; Stornaiuolo & LeBlanc, 2016). This definition required that those within a field of study examine how, why, and where norms, rules, ways of doing, ways of being in relationship to topics, processes, procedures, and each other, are critiqued with a social justice view (Bozkurt, Xiao, et al., 2023). Further, examining the spaces and places where those who are marginalized and disenfranchised can find intentionally equitable hospitality (Bali et al., 2019) was an essential component. Luke (2012) explored how literacy in education utilizes "community study, and the analysis of social movements, service learning, and political activism, …. popular cultural texts including advertising, news, broadcast media, and the Internet" (p. 7). This connected to the concept of educommunication that was discussed in the media literacy section of this dissertation.

Digital literacies and technological competencies are important considerations in FoE where TEds create course content and design learning experiences with an infusion of literacies into methods and core course requirements. Foulger et al., 2017 introduced the teacher educator technology competencies to support the transformation of teaching practices of TEds. Although this framework hinted at MDL within an overall skillset when using technology there are other frameworks that also incorporated literacies. Falloon (2020) examined global competency and digital literacy frameworks with a focus on teacher education and incorporated facets from the TPACK framework (Koehler & Mishra, 2009) which is prominent in teacher education. Falloon

(2020) shared a conceptual framework that incorporated personal ethical competencies and personal professional competencies which was a helpful lens through which to examine the lived experiences shared by the participants in my research.

Martínez-Bravo et al. (2022) examined eight international digital literacy frameworks, including several well-known frameworks such as the UNESCO Global Framework, the European Union's (EU) DigComp framework, and the International Society for Technology in Education standards for teachers. Some of these frameworks were also included in the Digital Quotient (DQ) Institute's *Common Framework for Digital Literacy, Skills and Readiness* which reflected a global picture of ideas and organizations linked around digital literacies and competencies (link to DQ global standards graphic). Martinéz-Bravo et al. (2022) analyzed these digital competency frameworks for common content, thus providing an integrated perspective. Six facets of digital literacy were found in each of the eight frameworks, which are outlined as critical, cognitive, operational, social, emotional, and projective dimensions (Martinéz-Bravo et al., 2022). The elements revealed essential concepts that informed and shaped my understanding of the digital literacy work by TEds in this research, and I wondered if the participants were aware of these facets in their teaching practice.

The overarching conception of digital citizenship subsumed all layers of skills, fluencies, competencies, literacies, and criticality when using, creating, and communicating with digital technologies and resources (Choi et al., 2018; Hoechsmann & DeWaard, 2015). Additionally, citizenship inferred activism, engagement, and cosmopolitanism (Zaidi & Rowsell, 2017). Belshaw (2012) proposed a model with nine Cs of digital literacy, identified as curation, confidence, creativity, criticality, civics, communication, construction, and cultural. These incorporated key citizenship elements. When focusing on digital citizenship and the responsible use of technology, Ribble (2017) proposed nine themes, including access, commerce, communication and collaboration, rights and responsibilities, health and wellness, fluency,

security and privacy, etiquette, and law. These are further categorized under three principles of behaviour – safe, savvy, and social (Ribble, 2017). Although citizenship was a worthy area of investigation which may have provided interesting facets to reflect MDL practices of TEds, I viewed this as beyond the scope of this research yet recognized this as a potential area for future attention.

Definitions and practices of critical MDL are continually in flux, since contexts dictate the core and critical elements. In FoE, MDL is shaped by and adapts to the current cultural, social, political, and technological climates. This included the challenges brought on by the global COVID-19 pandemic, which had some impact on the stories and media artifacts of lived experiences that the participants in this research shared.

For this research, multimedia refers to information and teaching materials created, produced and stored using digital alpha-numeric text formats such as e-books and online magazines; audio recording such as music and podcasts; videos such as recorded presentations, moving graphics called gifs, and films; images from camera or mobile cell phones; and iconography such as logos or pictograms. Multimedia can be stored in formats that are closed, as those controlled through digital rights management technology, or openly shared using universal storage bus technologies or on the world wide web. Within this research multimodal texts are described as those learning objects and teaching artifacts that incorporate more than one mode of presenting information, weaving together elements such as audio and images to create a stop-motion or digital story. Similarly, intertextuality is defined as texts that reflect and are influenced by characteristics of other texts such as that modelled in the Codex Seraphinianus (Seraphini, 1981) and digital video productions such as read-aloud storybooks.

2.2.3.3 Literacies: Untangling a Concept

Surrounding these definitions of media and digital literacies there existed a Pandora's box of literacies terminology (Belshaw, 2012). Although each of these terms has a focus and purpose

that may be bounded by specific moments in time, removing these terminologies from their discourse locations and specific contexts as I have done here, can add to or illuminate the confusion. Literacies are entangled within conceptions of transliteracies (Sukovic, 2016), cosmopolitan literacy (Zaidi & Rowsell, 2017), cultural literacies (Halbert & Chigeza, 2015), place based literacies (Harwood & Collier, 2017; Mills & Comber, 2013); artefactual literacies (Pahl & Rowsell, 2011); information communication literacies (Forkosh-Baruch & Avidov-Ungar, 2019; Horton, 2008); internet or web literacies (Moz://a, n.d.); technological literacy; multiliteracies (The New London Group, 1996); multimodal; multicultural; visual literacy (Collier, 2018), transmedia literacies (Jenkins, 2010), re/mix literacies (Hoechsmann, 2019), and living literacies (Pahl et al., 2020). Although this literature review does not specifically examine this tangle of terminologies, these are mentioned here to acknowledge the confusion and recognize potential misconceptions resulting from the conflation of terminology (Belshaw, 2012; Spante et al., 2018).

When untangling these conceptions of literacies, I was influenced by Luke's (2012) conception of critical literacies described as "historical works in progress" as a "process of naming and renaming the world, seeing its patterns, designs, and complexities, and developing the capacity to redesign and reshape it" (Luke, 2012, p. 9). This connected to Freire's (2018/1985) notion of reading the word and reading the world. This conception of critical literacy rang true for my research since I wondered how TEds used and applied their contingent attitudes and technologies since their MDL and OEPr "depends upon students' and teachers' everyday relations of power, their lived problems and struggles, and … on educators' professional ingenuity in navigating the enabling and disenabling local contexts of policy" (Luke, 2012, p. 9).

As part of this untangling of concepts, I was further influenced by the conception of living literacies posited by Pahl et al. (2020) since "literacy flows through people's rites and

practices, and it's dynamism and vitality rest firmly on thoughts, emotions, movements, materials, spaces and places" (p. 1). My work was influenced by Street's notion of a "utopian conception of literacy as always to come" (as cited in Pahl et al., 2020, p. 164) and gained understanding that literacy practices are embodied, bound within contexts, and ideological rather than solely autonomous. Literacy was conceived as both noun and verb, revealed through the TEds actions and endeavours of striving to find the ephemeral, half-glimpsed spaces of the 'not-yet' (Pahl et al., 2020). As reflective of a P-IP research design, it was this living literacy practice within the OEPr of TEds that I suspected would be revealed through their lived experiences and intentionalities with MDL. This will be further described in the upcoming research methodology section.

For this research, the primary conceptualization for literacy/literacies recognizes that literacies are both an internal, cognitive ability and a social practice, with each requiring action and reflection. Although Stordy's (2015) taxonomies of literacies was particularly helpful as a starting point, there was potential for generating a combinatorial representation of an integrated conception of media *AND* digital literacies. Although a graphic rendering may be forthcoming from this research, I admit to a state of 'not-yetness' and deferred this conceptual work to a later date. My future efforts may continue to make explicit links to established origin stories of literacy terminology or integrate definitional information about inherited characteristics of the range of research foci of literacies that are evident in the field of education.

I acknowledged efforts to bring together understandings of the separated concepts of media literacy and digital literacy, recognized as complex concepts (Martinez-Bravo et al., 2022; Nichols & Stornaiuolo, 2019; Stordy, 2015). The extent to which global efforts attempt to bring media literacy and digital literacy into focus was evident in documents such as the *Common Framework for Digital Literacy, Skills and Readiness* (DQ Institute, n.d.) and the *Media and Information Literacy Country Analysis* (UNESCO, 2013). Although media literacy and digital

literacy are commonly seen as separate and distinct concepts, it is through a process of combination that perhaps clarity can be gained. Bringing transparency to the distinctions between skills, fluencies, competencies, and literacies with the *Spirals to Literacies* graphic rendering (see Figure 10) may be a starting point. For this research, I remixed MDL frameworks that include the individual cognitive components (what participants know and think), to their actions within social contexts (what they say and do) (Gee, 2015). Although I am not minimizing the complexity of MDL as a concept, something that may be as challenging to understand as the inner workings of the Hubble telescope sent into space, I endeavour to clarify the facets of MDL and OEPr in this research.

2.3 Crystallizing Theoretical and Conceptual Frameworks

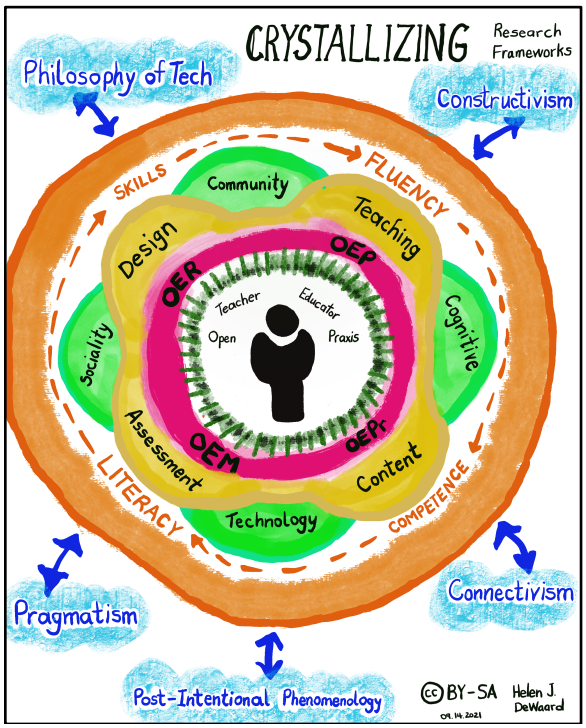
I attempted to bring these theoretical and conceptual frameworks together as part of my efforts to examine the whole entirety of this research literature. This was part of my crystallization process. As I examined the assortment of theoretical and conceptual components in isolation, I realized that the many disparate elements could imply a discontinuity in how these individual frameworks informed my research actions. The crystallization methodology, as revealed in the next section, suggested the application of a fluidity of ideation; bringing elements into focus in order to see what frames my seeing (Lather, 1993). Not only does this fluid shifting of concepts provide an intermittent and changing focus, it may open up "spaces of constructed visibility and incitements to see which constitute power/knowledge" (Lather, 1993, p. 675). I suggested this enhanced a feeling of openness as I interweave conceptions throughout the proposed research methodologies and phases, as outlined in the next section.

The role and identity of the TEds as the participants was paramount and central to the research. By focusing on the person in the first phase of the research and interview, I began the research by identifying characteristics and qualities of the OEPr of TEds within Canadian FoE contexts. This was central to the P-IP theory as previously outlined and P-IP as methodology

described in the next section. Bringing my awareness and experiences with OER, OEP, and OEPr supported me in the second part of the research, the interview phase. With a focus on OEPr, I crystallized my attention on identifying qualities, characteristics, and negotiations into openness exhibited and revealed by the participants in both phases of the research (see Figure 12). As identified in the interview protocol (see Appendix D) I focused research attention to the MDL skills, fluencies, competencies and literacies of the TEds, as revealed and shaped within their OEPr, and as these related or were influenced by their FoE contexts. It was *through* these stories of lifeworlds, lived experiences, and intentionalities, that the MDL might be revealed. This was not a linear process, nor was it bound by time or spaces. As evident in the description of P-IP research, this research crystallized from a fluid, iterative, permeable, malleable, and reciprocal research process.

Figure 12

Crystallizing Research Frameworks



Note. Compiled and remixed from literature review for dissertation of H. J. DeWaard. Published under CC BY-SA license (DeWaard, 2021).

In summary, this literature review outlines the theoretical and conceptual frameworks that support and guide this research. This chapter lays out what is known in the key areas surrounding the research questions and the areas where questions emerged in the literature in the areas of teacher education with a focus on teacher educators, open educational practices, and media and digital literacies. Issues and contested terrain are exposed and connections to the research are provided. In the next section/chapter I outline the research design, the methodology, and the processes used to generate and gather data for this research.

Chapter 3: Research Design

The writer's object is-or should be-to hold the reader's attention. ... I want the reader to turn the page and keep on turning to the end. (Barbara Tuchman, *New York Times,* February 2, 1989)

As suggested in the quote, I share this research story with the aim to hold your attention, to keep you turning these digital pages, and to read to the end of this inquisitive inquiry adventure. In this section, I reveal the plot lines and scenes of the research story, as I explain the methodology, methods, validity, and ethical considerations. Although the methodological tools applied to this research are reflective of the theoretical and conceptual frameworks, I resist attempts to "impose a single, umbrella-like paradigm over the entire project" (Denzin, 2017, p. 10). Throughout this research I attempt to reframe traditionally written research stories as I "move forward into new spaces, into new identities, new relationships, and new radical forms of scholarship" (Denzin, 2017, p. 14). In the methodology section, I examine why post-intentional phenomenology and crystallization are responsive to research investigations with a focus on MDL and OEPr, and how these methodologies align with the theoretical frameworks shared in the previous sections. The methods section outlines a) data gathering strategies and practices; b) research timelines and phases for the research; c) details about participant selection and considerations for anonymization; d) processes for interviewing; and e) details about data coding and analysis. Once issues of validity and ethics are reviewed, a crystallization of the research design is shared.

3.1 Methodology

> "We seek those ruled by partial sight and limited voice-not partiality for its own sake but, rather, for the sake of the connections and unexpected openings situated knowledges make possible." (Haraway, 1988, p. 590)

As Haraway suggested, it is through unexpected openings and partial sight that I researched the connections between MDL, OEPr and the TEds situated within FoE in Canada. In the next

section of the dissertation, I elaborated on my reasoning for the selection of post-intentional phenomenology as the methodology and why a crystallization methodological approach was applied to this research.

3.1.1 Post-Intentional Phenomenology as Methodology

As a research methodology, P-IP (see Figure 1) brings together a focus on human-technology relations and a pragmatic approach to the study of ideas and experiences discovered within usage, design, policy, and research (Rosenberger & Verbeek, 2015). P-IP research explores the ways in which technologies impact relationships between human beings and the world thus shaping human interactions, relationships, and embodiment (Ihde, 2011; Rosenberger & Verbeek, 2015). Following a P-IP approach, my research inquiry examined the lifeworld and lived experiences of TEds relationality (lived relation), corporeality (lived body), spatiality (lived space), temporality (lived time), and materiality (lived things and technologies) (Vagle, 2018) with a focus on the phenomenon of MDL within an OEPr.

Rosenberger and Verbeek (2015) acknowledged the lack of a strict methodology for P-IP scholars to follow; however, they recognized central concepts and essential elements of those applying this methodology. As we are always hearing, seeing, feeling, or thinking something (Rosenberger & Verbeek, 2015), the P-IP methodology applied to this research attended to these intentionalities as they occur between participants, technologies, and their lived experiences in the world, both physical and virtual. Post-intentional phenomenologists explore the indirect and mediated relation between human-technology-world (Ihde, 2011; Rosenberger & Verbeek, 2015). This mediation is the "*source* of the specific shape that human subjectivity and the objectivity of the world can take in this specific situation. Subject and object are *constituted* in their mediated relation" (Rosenberger & Verbeek, 2015, p. 12) (*emphasis in original source*). Intentionality is the fountain from which subject and object emerge (Rosenberger & Verbeek, 2015).

For my research, this fountain was the intentionality of participants within the phenomenon of MDL in their OEPr, revealed through their human-technology-world interactions. The objectivity of the digital world found within open educational networks, spaces, places, and events are reflected within and through the interviews and digital artifacts created and shared by the participants. An awareness of MDL, exhibited through the lived experiences of these micro-events and intentional actions, are revealed in the participants' stories.

Vagle (2018) suggested that P-IP researchers should follow lines of flight. These occur in three ways: first, by emphasizing connections "as a way to open up complicated movements and interactions" (Vagle, 2018, p. 118); second by remaining "open, flexible, and contemplative in our thinking, acting, and decision-making" (p. 119); and, third by "resisting the tying down of lived experience and knowledge" (p. 119) to allow for unanticipated ways of knowing. With openness identified as a key consideration in P-IP research, there was an evident fit for an investigation into OEPr.

For this research, technology was an essential factor, particularly in light of COVID-19 pandemic restrictions which heightened the role technology plays in mediating the world of teaching and learning. Ihde (2011) posited that technology is not merely a tool through which we communicate; it is a "socially constructed cultural instrument in which current paradigms were an index of the sedimentation of beliefs" (Kennedy, 2016, p. 94). Ihde (2011) suggested that a reflective arc exists between agent and world, as mediated through the technology. I considered that it was through the active use of technology that TEds "*find-ourselves-being-in-relation-with others* ... and *other things"* (Vagle, 2018, p. 20; emphasis in original).

In my P-IP research design I examined the intentionality of technology within the phenomena being studied since a P-IP approach allowed for a pathway that has "parameters, tools, techniques and guidance, but also allows us to be creative, exploratory, artistic and generative with our craft" (Vagle, 2018, p. 52). Reflexivity, a key feature of P-IP research, was

described as a “dogged questioning of one’s own knowledge as opposed to a suspension of this knowledge” (Vagle, 2018, p 82), unlike other phenomenological traditions that used bracketing or bridling (van Manen, 2014). Research suggested phenomenologists of all traditions take an open stance to data gathering with a whole-part-whole analysis process. This process stemmed from the idea that phenomenologists think about “focal meanings (e.g. moments) in relation to the whole (e.g. broader context) from which they are situated” (Vagle, 2018, p. 108). For this research, I examined the meanings and moments the participants revealed of their MDL within an OEPr, looking for where these resided within broader global contexts and frameworks.

With this in mind, I focused the research on the lived experiences and the nature of ‘becoming’ literate within MDL practices as revealed in participants’ intentionality of technology/world relationships. It was through this “mediation and mutual constitution” (Rosenberger & Verbeek, 2015, p. 12) between subject and object, between teacher educator-artifact production-world of teacher education that I discovered emerging connections among MDL and OEPr. Since P-IP applied a practical and material orientation in order to examine how human-technology-world relations are organized, this methodological approach suits this research design.

3.1.2 Crystallization as Methodology

Through reading, experiences, and an interest in media making, I perceived that the concept, as well as the approach to crystallization, was supportive of my research design. From the graphic rendering of this concept, and previously described in the literature review section on crystallization, my rationale included finding a balance between depth and breadth in the process and products from this research, creatively crafting flexible amalgamations with data gatherings and generated analyses, and iteratively processing the codes and findings in order to manage the complexity of the interpretations and enhance sensemaking (Ellingson, 2014; Guba & Lincoln, 2005; Richardson, 2001).

Crystallization can "build thick and rich descriptions through multiple forms, genres and modes to embed the researcher in a reflexive process allowing them to apply their craft" (Stewart et al., 2017, p. 3). In this way, as I crafted the research design, my research reflexively crafted me as a researcher. Ellingson (2014) advocated for crystallization as a creative, flexible amalgamation of everyday stories rather than a specific set of strategies.

I selected a crystallization framework for multiple reasons (see Figure 13). First, crystallization created knowledge about a phenomenon through a process of generation to reveal and deepen complex interpretations (Ellingson, 2014). Because teaching practices are relational, and the application of MDL to those practices particularly within OEPr are mediated through technologies, these relational moments are seen, heard, felt, shared, analyzed and categorized in multiple, nuanced ways across a variety of digital artifacts. Crystallization revealed these multiple facets of the lived experiences of TEds in FoE.

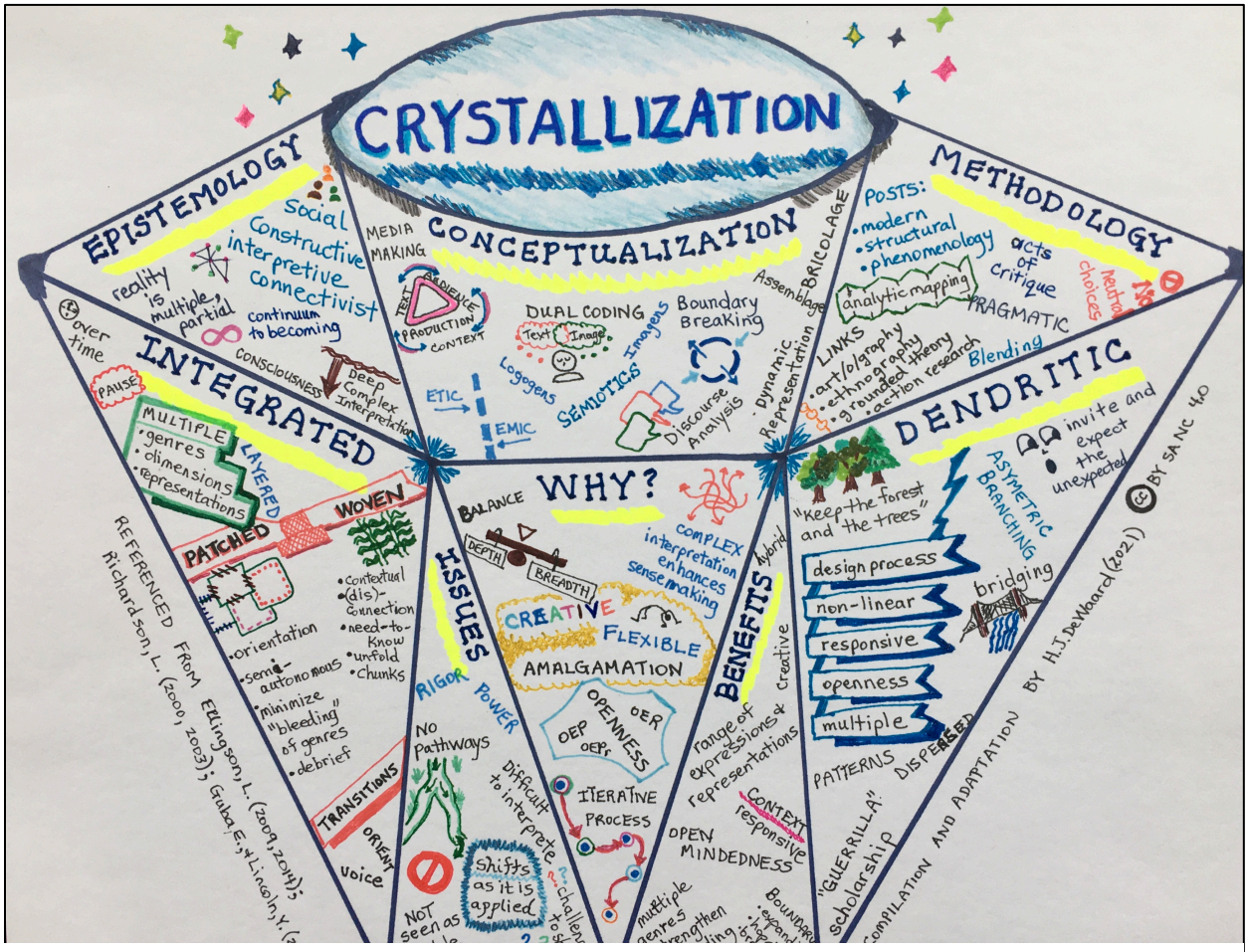
Second, a crystallization framework applied various analysis strategies to generate understanding from a multiplicity of moments along a qualitative continuum (Ellingson, 2014). By applying crystallization to the P-IP methodology, I opened avenues to make sense of the data entanglements (Ellingson & Sotirin, 2020) that were found in the MDL and OEPr stories shared by TEds. My research included variations of typology, visualizations, and pattern making to reveal rich descriptions of the data moments.

Third, the multiple variations of texts and representations created within this research work depended on "segmenting, weaving, blending, or otherwise drawing upon two or more genres or ways of expressing findings" (Ellingson, 2014, p. 445). It was through the many media making productions of both the participants and myself as the researcher, that the stories of lived

experiences with MDL and OEPr were revealed.

Figure 13

Crystallization



Note. Compiled and remixed from Ellingson, 2009, 2014; Guba & Lincoln, 2005; Richardson, 2000, 2003. Published under CC BY-SA-NC license (DeWaard, 2023).

Fourth, crystallization required reflexivity throughout the process of design, data gathering, and representation generated from the findings and analysis (Ellingson, 2014). Within the P-IP methodology this reflexivity helped me critically examine the non-neutrality of technologies as it simultaneously amplified and reduced (Kennedy, 2016) the mediations within the OEPr of TEds.

Fifth, crystallization suited P-IP methodologies as it "embraces, reveals, and even celebrates knowledge as inevitably situated, partial, constructed, multiple, and embodied"

(Ellingson, 2014, p. 446). Like P-IP methodologies, crystallization had no pathway or formal structure but followed an emerging design that was both integrative and dendritic (Ellingson, 2009) with data entanglements (Ellingson & Sotirin, 2020) were woven, patched, layered, blended, dispersed, and disparate.

To be true to the orientation of wonder that was an essential methodological aspect of P-IP inquiry, I infused crystallization strategies throughout the research design as I engaged with data and iteratively applied coding strategies (Saldaña, 2016) to the lived-experience stories, images, and media shared by the participants. I remained attentive to the "sudden realization of the unsuspected enigmatic nature of ordinary reality" (van Manen, 2014, p. 360). I tempered my research design decisions by the fact that crystallization may be a challenging methodology requiring sustained commitments of time and energy (Ellingson, 2014). It was the creativity within the iterative readings and renderings that provided an exciting framework for this research design.

3.2 Methods

Next, I outline the specific details for this research in terms of data gathering (Vagle, 2018) and data engagement (Ellingson & Sotirin, 2020). I share the research phases and timeline, decisions on participant sampling, interview planning and design, and my data coding and analysis process. I conclude this section by sharing thoughts on the validity, credibility, and trustworthiness of this research as well as ethical considerations and decisions made as I worked through this research.

3.2.1 The Gathering

Vagle (2021) suggested P-IP researchers gather materials rather than data. This distinction is important in order to semantically separate research endeavors from qualitative, positivist perspectives about what researchers collect. Thus, I applied the term data gathering for my research process. Vagle (2018) suggested that the phenomena determined "how it is to be

studied" (p. 75) and described multiple data gathering moments including observations, writings, interviews, drawings, and music collected over a specified period of time. In fitting with my research topic, this method honoured the ethos of openness of OEPr, provided time to examine the multiplicity of textual information, and revealed an openness in data gathering. Vagle (2018) suggested data moments could include arts-based methods such as drawings, paintings, photos, visuals, films, and performance art. Knowing that these were potential options did not mean that I used all of these formats in my research.

I planned the interview protocol (see Appendix D) to be fluid and flexible since unstructured interviews were the most common interview type in phenomenology due to their open dialogic nature (Kennedy, 2016; Vagle, 2018). Data gathering began with web searches of FoE sites for participant related information. Digital information originating from digital interactions created by participants in online platforms were "extremely insightful to understand what digital actors 'do', rather than who they 'are'" (Caliandro & Gandini, 2017). I searched for open sources of information such as participants' social media locations including blog sites, Twitter, Instagram, and course websites wherever these were posted openly on the internet. This information supported the focus and topics that I wove into the interview, often as a conversation prompt or question. Although information garnered from multiple web sources revealed MDL in action, these data gatherings provided insights into the lived experiences, intentionalities, and digital identities of the participants.

For my own processes in this research, I used a variety of digital technologies to manage and generate data gatherings. First, digital data analysis was done using NVivo on an Apple Macbook Pro laptop computer. I used Zoom video conferencing software to capture the interviews. The web-based audio transcription software Otter.ai generated drafts of the interview transcripts in a timely manner, sometimes allowing me to return transcripts within forty-eight hours to the participants. The web-based word cloud creation software WordArt was used to re-

create the transcripts into graphic renderings. This was selected from the abundance of word cloud generators since I already had a free account with this service. This software allowed me to download a portable network graphic (PNG) image and provide a web-access link to the interactive word cloud image. I used the web-based open access software Draw.io for concept mapping since it integrated into an existing Google account. I used the graphic visualization software ProCreate on an iPad to generate sketchnotes of concepts and research findings.

Figure 14

Research Journal Notes

Note. Compiled and remixed from research journal for dissertation. Published CC BY license (DeWaard, 2023).

Since both digital and paper forms of research journals were fluid territories for me, I kept both versions of research journals to capture notes of my thoughts and observations. This included annotations, video recordings, and textual artifacts. I curated, stored, and organized notes within participant folders on my computer hard drive, on private blog posts, and posted thoughts on open blog posts when anonymity was maintained.

Notes and annotations for this research included jottings, descriptive observations of social media sites such as tweets and blog posts, and linkages recorded as marginalia on transcripts. Since jottings and cognitive connections occurred at any time, these were recorded at the time, place, and available media, indicative of the fluid nature of the research process. Saldaña (2016) suggested these private, personal, written and recorded musings become "question-raising, puzzle-piecing, connection-making, strategy-building, problem-solving, answer-generating, rising-above-the-data" heuristics (p. 44). I heeded Saldaña's (2016) caution to not rely on "mental notes to self" (p. 45) as a

method, and took advantage of the technologies at hand to capture my wonderings and wanderings along research paths.

Vagle (2018) suggested taking walks to provide time and space for phenomenological musings to occur. With the COVID-19 pandemic in full swing as I conducted the research, outdoor walks and bike rides not only provided time to think, or to NOT think, but also became an avenue for mental health and well-being during this research phase. In true P-IP fashion, the technology made me as researcher while I made notes about research data gatherings (see Figure 14). As the liveliness of my notes and musings also became data gatherings, these notes revealed the "affective or entangled engagements with materializations or textualizations whether as a glow or a strange idea or an imaginative glimpse into a new becoming" (Ellingson & Sotirin, 2020, p. 22).

Throughout the process of gathering these data materials, I created observational notes and began to establish preliminary connections to MDL frameworks, in the ways participants exhibited MDL within and through these online data assets. In the early stages of the research, I engaged with data making (Ellingson & Sotirin, 2020) in order to create dynamic representations for each participant. I created and revisited transcripts, video interviews, conceptual maps of connections, locations, and literacies using a variety of software in order to "animate new ways of thinking and relating by affirming heretofore unimagined configurations" (Ellingson & Sotirin, 2020, p. 11).

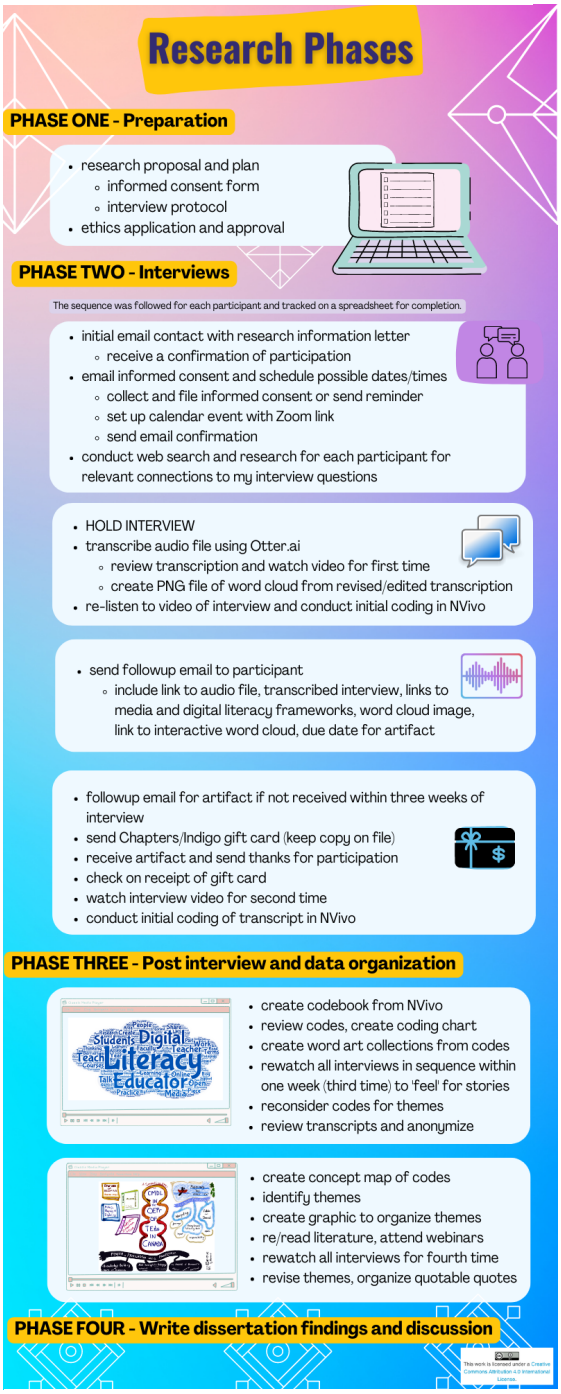
3.2.2 Research Phases and Timeline

Next, the phases and timeline for this research are provided in both text and graphic formats. Although this timeline suggested a linear process, spirals and recursions occurred throughout the research process in order to revisit, review, and reflect on data gatherings and research journal notes. This is symptomatic of a P-IP methodology as an iterative and rhizomatic process. This supported the assembling of data engagements (Ellingson & Sotirin, 2020) since data were

generated from the lived experiences and intentionality of the participants, as revealed through actions, artifacts, technologies, and discourses within each research phase (see Figure 15)

Figure 15

Research Phases



Note. Compiled and remixed from research design chapter of dissertation. Published under CC BY license (DeWaard, 2023).

Phase One included the preparatory work of seeking research ethics board (REB) approval, preparing the informed consent forms, drafting the interview protocol, developing a draft interview schedule, and searching the web for potential participants. During this phase I conducted one interview with a teacher educator outside the Canadian teacher education context who was familiar to me. As a novice researcher, this pilot interview allowed me to reflect on the interview process and prompts, and make adjustments to the interview protocol as part of the REB submission. This first phase ended once the REB approval was received.

Phase Two included a sequence of initial contacts over the space of five months. I aimed to schedule these at least one week apart in order to manage the data gathering and data engagement process I planned. Throughout this phase, I maintained both electronic spreadsheet and research notebook forms of tracking to ensure I followed a consistent sequence with each participant. The process began when an

introductory email was sent to the participant (see Appendix B). Once the TEd agreed to participate, I conducted a web search for information that was relevant for this research e.g. publications, course related information, and social media posts. I recorded this information in a Word doc version of my research journal, along with any notes on insights into MDL connections or thoughts for possible inclusion in the interview.

After the initial agreement to participate, I sent out the informed consent information (see Appendix C) which included a video link as a way of introducing myself to the participant and providing information about the research. The interview was then scheduled for a mutually convenient time and the informed consent was collected. I also sent a copy of the interview protocol (see Appendix D), not with an expectation that participants would prepare prior to meeting, but to provide a guide to our conversation. After the first few interviews were completed, I changed the process slightly to include sending out an electronic calendar invitation which included the Zoom link so participants could see this event on their preferred calendar software.

The interview was then conducted. Immediately prior to meeting the participant, I reviewed my research journal notes to ensure I was fully prepared for the conversation. At the end of the interview participants were asked to prepare a digital artifact using a technology of their choice (text, image, graphic, audio, video) that was reflective of their MDL and OEPr lived experiences. As suggested by Ellingson and Sotirin (2020), this "participatory data engagement requires exceptional openness to change, to uncertainty and ambiguity, and to attending carefully to how different forms of knowledge emerge" (p. 95).

After the interview ended, the recording was saved to my laptop. The audio file provided from the Zoom recording was uploaded to Otter.ai and transcribed, usually within one hour of the upload. After downloading the transcription from Otter.ai, I reviewed the document as I listened and watched the recorded interview. This supported making any necessary edits and

observational notes. In this way, I re-encountered the data within an agentic and dynamic state (Ellingson & Sotirin, 2020). Although the recordings or transcripts did not materially change (Ellingson & Sotirin, 2020), my engagement with these data shifted to a different moment in time, thus altering my views in subtle and sometimes dramatic ways. Once the transcript was reviewed, it was saved prior to conducting a process of redacting identifying information such as names or geographic references. This redacted version of the transcript was then inserted into the Word Art software. The rendered word cloud image was then downloaded as a PNG file and stored on my computer. I also created a short screen-cast video of the some of the interactive word clouds which allowed me to detect words that were not noticed in the first viewing.

Figure 16

Word Cloud Example

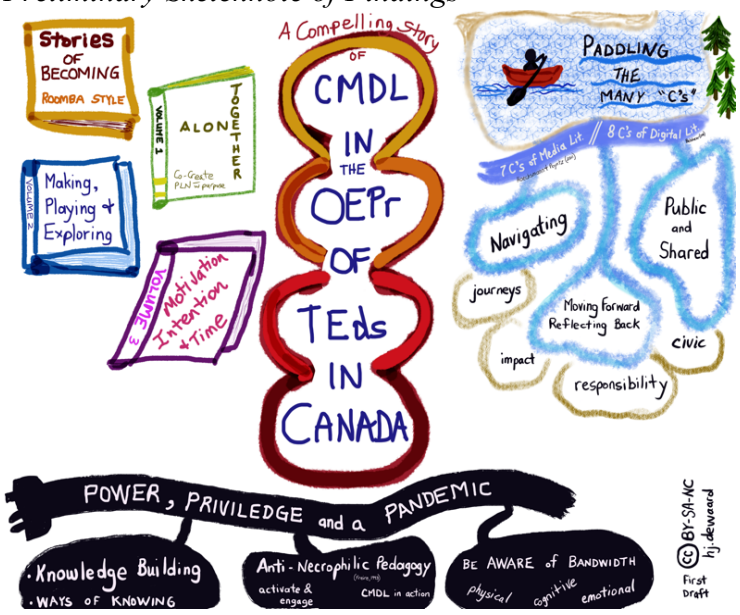
Note. Compiled and remixed from research interviews for dissertation of H. J. DeWaard. Published under CC BY license (DeWaard, 2023).

In the post-interview email sent to each participant, I included links to the transcript, the audio recording, and the PNG of the word cloud image for review and comments (see Figure 16). In this email I reminded the TEds of the second part of their participation – the creation of a digital artifact representative of their lived experiences with MDL in their OEPr. To provoke their thinking, I provided links to media and digital literacy frameworks that could be referenced for this artifact production. A soft due date was set for two weeks post-interview. I also included a digital e-card to a national bookstore chain as a way to recognize their gift of time with this project.

When I examined the artifacts, I delved more deeply into the TEds lived experiences with MDL within OEPr. This was an opportunity to "focus on analysis and creative representations of participants' experiences, with consideration of the researcher in a secondary role" (Ellingson,

Figure 17

Preliminary Sketchnote of Findings



Note. Compiled and remixed from research findings in dissertation of H. J. DeWaard. Published under CC BY-SA-NC license (DeWaard, 2023).

2009, p. 23). The participants created artifacts in a variety of formats – infographics, a sketch-note, blog post, video recording, interactive story created using Twine, and audio recordings. These digital artifacts revealed a representation of MDL and OEPr in action as a process of *becoming*. This part of the second phase was a way of "leading to a co-authored understanding of the experience being discussed between the participant and the researcher" (Ranse et al., 2020, p. 6). As mentioned, a spreadsheet and research journal chart were maintained throughout this phase to confirm completion of each task, to track progress, and ensured I reached projected timeline benchmarks.

Phase Three included work done after the interview phase was fully complete. During this phase I blocked one week to review all the interview video recordings while reading the transcripts, modelling the whole-part-whole process in P-IP methodology. This allowed me to make note of connections among and between participants' stories, as I began to notice trends and commonalities. Immediately following this week-long review, I took time to revisit codes already done in NVivo for each transcript (see Table 2 in Appendix H) and then created updated coding charts. I revisited the word art collections from the transcripts and created an overarching word art from all the keywords created by the Otter.ai software. As I did a third review of the

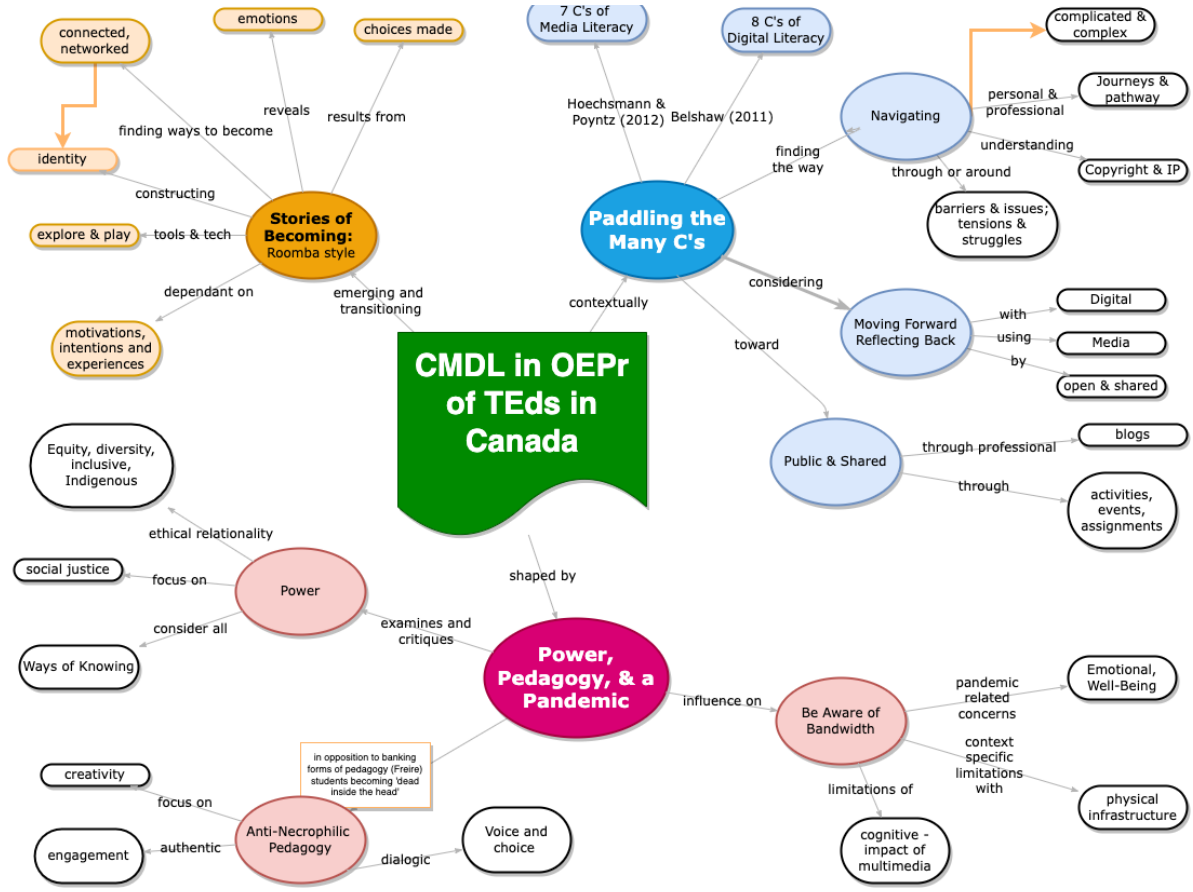
transcripts, I further redacted the documents to ensure confidentiality, and added notes and memos as marginalia.

The time came to generate unifying codes to discern the overarching research story. I reviewed the codebook within NVivo to combine codes to reduce the listing and provided detailed descriptions (see Table 3; Appendix H). Once this was completed, I created a graphic rendering of early and emergent ideas (see Figure 17) and a preliminary concept map (see Figure 18) as I attempted to bring ideas and conceptions together.

I shared these digital artifacts with critical friends in my personal/professional learning networks. After receiving feedback, I took a pause from my immersion into the data. During the next period of time I immersed myself in reading and rereading literature while also attending and viewing webinars relating to coding and generating themes. Phase Three ended with a renewed plan for revising themes and organizing quotes for the writing of the findings section of the dissertation.

Figure 18

Preliminary Concept Map of Findings



Note. Compiled and remixed from research findings in dissertation of H. J. DeWaard. Published under CC BY-SA-NC license (DeWaard, 2023).

Table 3

Sample of Codebook (Feb 9, 2022) from Appendix H.1

Name	Description	Files	References
academic integrity		1	2
access		1	3
actions		1	1
assessment		2	11
background		2	8
barrier		2	5
beginning		5	16
belief		1	1
bias		2	4
blog		2	8
care		1	4
certification		1	1
challenge		2	6
characteristics		2	4
co-create		2	3
co-design		3	9
collaborate		4	5
community		4	9
PLN		3	9
relationship		1	2
support		3	15
competence		1	2
concepts		1	1
connected		2	3
consent		1	1
context		3	14
cultural		1	1
conversations		1	1
copyright		2	3
critical		1	1
data		2	3
Digital		4	18
tools and tech		5	23
digital literacy		3	12
documented		1	1
emotions		1	5
engagement		2	3
equity		2	2
events and activities		4	8
experience		3	10
fear		1	1
frameworks		1	3
Identity		2	4
impact		2	2
inclusive		1	1
information literacy		1	1
informed		1	2

Feb 9, 2022 1

Table 2

Codebook Descriptions (sample from Appendix H.2)

Code Name	Description	Clarification	Reference count	Example
1. Access and accessibility	Access does not equal accessibility; access relates to being able to view or use CMDL / OEPr materials	Accessibility is related to UDL and making materials in multiple formats as required by disabilities regulations and legislation (W3C standards)	33 references in 10 files (access) 6 references in 3 files	"the first thing that we did actually was published a charter for 10 priorities for educational leaders in terms of where we think we might want to be going for strategies for digital technologies, including having them be you know, accessible, and open and free." N.K. artifact "and it's not just, I mean, it's accessible in the AODA way. But it's also accessible in you know, some people have like really busy lifestyles, and they need to be able to listen to it while they're doing their dishes, or they want to be able to have a quick glance at something and say, Should I deep dive deeper into that. So, an infographic or a drawing can provide that gateway. And so, for me, that's the that is the core of what multimedia production can do. It can provide these entryways into deeper thinking about topics." U.F.
2. Activities & events; experiences	The doing of stuff with or without others e.g. conference events, workshops, in class activities; professional work with CSSE, CATE etc.	With focus on CMDL and OEPr elements of public, shared, networked, collaborative, media production	69 references in 16 files 40 references in 13 files	"I often do the visitors versus residents grid with my students, just so that they can acknowledge where all of their identities are making footprints and who owns that as a way of talking about the challenges of technology, which I think like that's this big elephant in the room that we don't often get to really talk about. Even the tools that are institutionally supported are problematic, like the LMSs and things like that. So, while you can design some great learning pieces using them, you just have to have a critical eye to all the time, it had to be constantly vigilant about their use." U.F.
3. Assessment / evaluation	Practices and design of student tasks to make learning visible; includes	Applications of CMDL and OEPr strategies to ensure	22 references in 9 files	"I try to do my best to take on an ipsative sort of assessment approach. So, students are encouraged to recognize this, you know, how, what they came in with in terms of their own skills and knowledge versus what they leave with, versus say criterion reference, or reference. So, I really believe in the ipsative

3.2.3 Participants

Vagle (2018) suggested accounting for the number of data moments rather than the number of participants as a primary consideration in P-lP research. For this reason, I tracked all data gathered, not just the totality of participant contacts. The sequence for contact with participants was previously outlined in the research timeline section of this dissertation. Each data gathering moment allowed me to gain differing perspectives, explore the "yet-to-be-known" (Kinchin et al., 2010, p. 1), and clarify the elements of the TEds stories of *becoming* media and digitally literate within their OEPr.

I applied purposeful sampling to identify potential participants for the research. Decisions were based on my experience and knowledge of open educational practitioners and Canadian teacher education. One benefit of purposeful sampling was the ability to select teacher educators in Canadian FoE who best fit the established criteria for this research (Cresswell & Guetterman, 2019; Tracy, 2020). I selected participants who met a combination of two or more of these criteria:

- the participant currently worked or had worked within a Canadian faculty of education as an instructor within the previous two years;
- the participant had an active and easily discoverable social media presence on Twitter, Instagram, Facebook, YouTube, blog, wiki, or other social media spaces (Discord, Linkedin, Soundcloud, Slack, TikTok);
- the participant maintained an active presence on the web using a website, blog, wiki, or media curation space (Canva, Flickr, Pinterest);
- the participant showed evidence of using social media in their teaching, as evidenced in their academic biographical information and/or course syllabi, where available;

- the participant engaged in OEPr as described by Paskevicius (2018) and Paskevicius and Irvine (2019) and evidenced in course syllabi if available, academic writing, or the content of social media comments and contributions; and/or
- the participant had written about open educational practices, media and digital literacies, or efforts to engage within educational social media networks, as evidenced in their academic publications and their social media outputs (tweets, blog posts).

By establishing these criteria, I attempted to mitigate one of the weaknesses of purposeful sampling, that of inaccuracy or inconsistency in the selection criteria (Gay et al., 2012).

Despite having a listing of over 25 potential participants from my known networks, fourteen of the sixteen teacher educators I contacted agreed to participate. The sample size in this research, as suggested by Cresswell and Guetterman (2019), determined the depth and manageability of the data picture, with each additional individual adding to the research time requirements and complexity of data analysis. I resisted the urge to unquestionably establish the right number for sample size in this qualitative research since concrete quantities are reminiscent of "neo-positivist-empiricist framings" (Braun & Clarke, 2021, p. 202).

With the fourteen participants approached for this research, I had some flexibility should any participants become unavailable for the full research protocol. Finding additional possible participants was done through snowball sampling because participants revealed others who might fit the research criteria. In this way I was able to ensure a willing participant pool for the two phases of this research and safeguard sufficient data gathering should any participants withdraw from the research. As the research evolved, I used a tracking spreadsheet to diligently manage the total number of data moments that encompass the totality of this research.

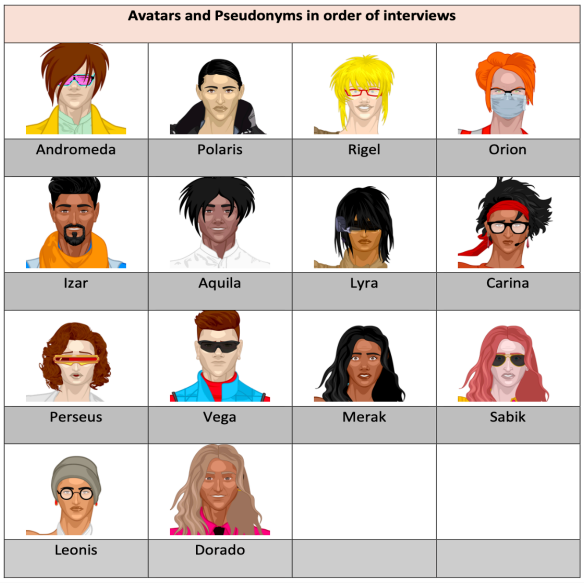
Although geographic and contextual information for participants was gathered, along with background information shared by the participants, this was not included in the research

findings. This contextual information may have a bearing on the participants' lived experiences as they disclosed information about barriers and issues, my focus remained on the individual experiences not the institutional factors relating to MDL or OEPr. The contextual details also became a concern relevant to maintaining the confidentiality of the participants, since these details had the potential to be identifiable to the readers of this dissertation. For this reason, the contextual and geographic details were redacted and/or omitted.

At the outset, the informed consent included the option for participants to indicate if they wished to be named openly in the research. Early in the research interview phase it became apparent to me that a consistent approach would best suit this research. Without needing to backtrack for subsequent permission to publish participants' names openly, and in order to allow participants to speak honestly about their lived experiences, I opted to maintain confidentiality by applying a randomly selected set of names from garnered from star charts as identifiers for each participant. This also allowed for gender to remain confidential. In future research, it may be advisable to be open about being open, and work beyond the constraints for anonymity or confidentiality as required for the research ethics board (REB) approval and as established on the informed consent form.

Figure 19

Participant Avatars



Note. Compiled and remixed from research design and findings. Published under CC BY-SA-NC license (DeWaard, 2023). Anonymized names and images for the participants in this research.

As noted, confidentiality of participants' identities was achieved through the use of randomized names selected from star charts, which supported me with participant identities when I started comparing and contrasting their lived experiences for the findings. I also created

randomly generated avatar images to represent participants' digital identities (see Figure 19). Characteristics on the avatar images were not representative of the participants' persona or gender but added a human face and a humanizing element to the stories shared. As I began writing, I also consistently used non-gendered language (they, them, their) when describing participants' stories as an equity consideration – the voice of each participant had equal importance in the findings. Additionally, as I wrote the findings, I consistently applied an alphabetic listing of participants' names to remove any potential privilege I may have applied to participants' accounts as unnoticed bias in my thinking.

3.2.4 Interview design

In my P-IP research preparation I confronted the myth that unstructured interviews are wide-open events without boundaries or parameters (Vagle, 2018). Having a "clear sense of the phenomenon under investigation" (Vagle, 2018, p. 86) and orienting the interview toward that phenomenon were essential considerations. For this reason, I structured the interview protocol carefully, yet understanding that I would apply the protocol with flexibility. As part of the research ethics approval, I piloted and adjusted the interview protocol prior to using it with research participants. The semi-structured questions and conversation prompts outlined in the interview protocol were adjusted for each participant depending on data gatherings done between the time the interview was booked and when it was conducted. In this way, I was able to make and remake the data gathering from interviews in a pragmatic, adaptive and agile manner (Ellingson & Sotirin, 2020). The prepared questions, provocations, and points of conversation not only provided detail for research ethics approval, but supported me during the interviews since interviewing was a new research practice for me. The questions and provocations helped me probe and explore the lived experiences and stories relevant to the intersection between MDL and OEPr (see Appendix D).

Interviews lasted approximately sixty minutes, with some going longer with participant permission. During the interview I made notes to capture points of interest or items which required further probing. I structured the interview in five sections. First, after a general ice-breaking question, I shared details of the research and my ethical commitments before asking participants to give verbal or thumbs up signal as approval for recording of the interview. Second, I probed participants' background stories of becoming a teacher educator. This led into the third part of the conversation where prompts about their OEPr were followed by questions about MDL as evident in their OEPr. These sections of the conversation ended with a prompt to identify 'non-negotiable and perceived essential elements' of OEPr and MDL. In the fourth section I probed into issues and barriers to MDL within their OEPr. This was followed by an opportunity for participants to ask me any questions. At the end of the interview, the next steps and creative artifact production details were reviewed. Upon completion of the interview, the recording and audio file was captured on my laptop for immediate review.

The interviews were engaging, collegial, and responsive events. As evident in the transcriptions, most of the participants knew of me or had awareness of my academic and scholarly work, so they were not strangers in the truest sense. Although I had no previous contact with most of the participants prior to this research, some were active within similar networks and one participant had a deeper scholarly connection. Some of the interviews followed the protocol closely and some participants referenced the prompts on their copy of the protocol. Other interviews diverged significantly from the scripted protocol. During these conversations I referenced the protocol I had displayed on a second monitor as a way to ensure the key foci were covered. The recording for a few of the interviews was paused as needed for participants to attend to matters in their home or office contexts. Some participants shared their screens in order to showcase digital artifacts they referenced in the interview. The uniform resource locator links were shared in the Zoom chat so I was able to follow-up with a closer exploration after the

interview concluded, adding to the data gathering. After the interviews were completed, I took time to collect the data moments and record impressions and observations in my research journal page for each participant.

3.2.5 Coding and analysis process

When conducting P-IP research it was important to "document, wonder about, and question the assumptions of what we take to be normal, bottom lines, and moments we are shocked" (Vagle, 2018, p. 154). Throughout each phase of the research, it was not so much looking closer or harder at the data, "but of seeing what frames our seeing – spaces of constructed visibility and incitements to see which constitute power/knowledge" (Lather, 1993, p. 675). Since gathering of P-IP moments was delicately intertwined with analysis (Vagle, 2018) I intentionally conducted interviews and data coding simultaneously and recursively. Thus, data coding and analysis was an ongoing and iterative process, done between and among the interviews. NVivo, one form of computer assisted qualitative data analysis software (CAQDAS), was used throughout the project. Despite my awareness of varying software products and affordances, secondary CAQDAS tools were not integrated into this research. This decision was based on the time and digital fluencies required for learning and using additional data analysis software, as well as concerns relating to privacy and security issues the use of additional software created.

My coding process followed that of thematic analysis in that both semantic codes which hold surface and explicit meanings, and latent codes which hold implicit and underlying meanings were used (Braun & Clarke, 2021). Most of the codes captured one idea or facet, with potentially multiple codes attached to one statement in the transcript, artifact, note, memo, or social media element (Braun & Clarke, 2021). Each interview was coded within one week of completion to ensure I had a clear memory of the event. All interviews were re-coded in Phase Three of the research in order to bring codes, memos and notes together at the same time, with the intention of seeing how themes would emerge.

Rereading Braun and Clarke (2022), I was reminded that themes do not emerge, they are generated from the data. Thus, themes are constructed from the codes "like multi-faceted crystals – they have a core, an 'essence', which is evident through different facets, each presenting a different rendering of the 'essence'" (Braun & Clarke, 2021, p. 208). It was through this insight that I realized I needed to revisit the crystallization methodology as a way through the messiness of the codes to crystallize the core findings generated from the data entanglements in which I was mired.

As previously mentioned in the data gathering section, the transcript texts from the interviews were imported into the WordArt word cloud generator. I recursively reviewed and revisited the word cloud images, and curating them into a collection, thus providing a quick way to glance at differences or commonalities occurring between the participants' lived experiences. In this way l engaged in the crystallization of understanding since recordings and digital artifacts "*offer lively and intriguing options for making, assembling, and becoming qualitative data*" (Ellingson & Sotirin, 2020, p. 33, emphasis in original).

I returned to the concept mapping Draw.IO to bring ideas and conceptions into focus. I looked for examples of lived experiences of MDL in OEPr as evidenced in the interview transcripts, observational notes, and word cloud images. I exported and revised the codebooks from the coding of each interview done in NVivo. These provided a record of the evolution of my coding skills and the changes in the data set as each interview was coded, but also became data moments worth gathering. I addressed changes in my growing confidence level as an emergent issue, since I was coding differently over time. At the beginning of Phase Three I reviewed and re-coded the interviews in NVivo, as well as the memos and notes documented in the interview transcripts.

Vagle (2018) suggested a whole-part-whole sequence for data analysis that I followed for each interview. This included: 1) a holistic reading of the full text to become "attuned to the

whole material-gathering event" (p. 110); 2) a line-by-line reading while note taking, adding marginalia, and journaling; 3) writing follow-up questions; (4) a subsequent line-by-line reading to examine meanings and extracting excerpts, thus creating a new data moment from these gathered texts; (5) a third line-by-line reading focusing on analytical thoughts; and (6) additional readings as needed to reveal and name the emergent patterns, themes, and meaningful units across and amongst the participant's collective data (Vagle, 2018). Within this process, I applied multimodal, media making and creative constructions to enhance the potential of opening new lines of meaning and understanding, of seeing what frames my seeing (Lather, 1993). Even the patterns that I detected from the memos, notes and visualizations were subject to categorization and coding (Saldaña, 2016). In my subsequent deep readings I generated code memos and themes reflective of the participant's "routines, rituals, rules, roles, and relationships" (Saldaña & Omasta, 2018, p. 15).

As mentioned, following this period of active coding and review, I paused to take time to look at the whole data set gathered for trends and themes. Themes were elusive in the volume of data gatherings I examined, so I drafted a preliminary sketchnote to pull ideas together (see Figure 17). This was followed by an early version of a concept map where codes and connections were explored (see Figure 18). A coding chart description was also created to consolidate an understanding each of the codes from the data including an applicable example from the data gathered (see Appendix H).

Although the exact coding techniques and strategies were generated from the data and the research design, I was aware of essential skills and attributes that supported my coding process. Saldaña (2016) identified personal attributes that qualitative researchers should possess – organization, perseverance, ability to deal with ambiguity, flexibility, creativity, rigorously ethical, and an extensive vocabulary. These supported the cognitive skills of "induction, deduction, abduction, retroduction, synthesis, evaluation, and logical and critical thinking"

(Saldaña, 2016, p. 338) required of qualitative researchers. Despite the extensive moments of ambiguity and uncertainty, it was knowing what I know about these personal attributes and cognitive skills in relation to my own skills and abilities with research and MDL in OEPr that gave me some measure of confidence in my coding process.

3.2.6 Validity = Credibility + Trustworthiness

> One must be able to use language to reveal what, paradoxically, words can never say. This means that voice must be heard in the text, alliteration allowed, and cadences encouraged. Relevant allusions should be employed, and metaphor that adumbrates by suggestion used. All of these devices and more are as much a part of the tool kit of those conducting qualitative inquiry as analysis of variance is for those working in conventional quantitative research modes (Eisner, 2017).

Eisener's quote reminded me of the importance of metaphor within my research. There were times when words failed or were insufficient; when alliteration, cadence, allusions, metaphor and images stood proxy to the true meanings in what needed to be communicated. These meaning-making devices became part of the research variance expected within the P-IP methodology. I considered that notions of validity and reliability were inconsistent with the social-constructivist epistemology and the interpretivist research design applied to this research, since these concepts were framed from a positivistic perspective. The nature of P-IP research is "creative, inventive, emotionally charged, and uneasy. "Good enough" researchers find ways to sustain all these aspects" (Luttrell, 2000, p. 8). Trustworthiness, rather than validity, emerged as the focus for determining the quality of this research as it was "rooted in the epistemological/ethics nexus" of standards such as positionality, discourse communities, voice, critical subjectivity, reciprocity, sacredness, and privilege" (Guba & Lincoln, 2005, p. 209). I explicitly considered the impact of the big-tent criteria for qualitative research (Tracy, 2010) – worthy topic, rich data, rigor, sincerity, credibility, resonance, significant contribution, ethics, and meaningful coherence. In

the research results, the claims, warrants and justifications (Carter & Little, 2007; Hart, 1998) were explored further.

In order for this research to be perceived as having value and merit, I framed my research in terms of trustworthiness, credibility, and transparency. From an interpretivist stance, research should include clarifying positionality, ontological authenticity, fairness, and voice; from a critical theory approach can be seen in researcher reflexivity (Guba & Lincoln, 2005). To increase research authenticity and trustworthiness (Guba & Lincoln, 2005), once the transcripts, reflective artifacts, and stories were graphically rendered, visualized, thematically coded, and analyzed, results were returned to participants for review. I provided these visualizations to the participants as reflective artifacts.

By applying a crystallizing methodology, credibility and trustworthiness developed over time, through the creation of many diffuse reflections and refractions within the data engagements, data analysis, and data representations (Guba & Lincoln, 2005).

> Crystals are prisms that reflect externalities and refract within themselves, creating different colors, patterns, arrays, casting off in different directions, what we see depends upon our angle of repose. Not triangulation, crystallization … crystallization provides us with a deepened, complex, thoroughly partial understanding of the topic (Guba & Lincoln, 2005, p. 208).

Further to this, Ellingson (2009) described crystallization as a research process that "turns back upon itself, highlighting its own construction by showing that no one genre offers truth. By making and problematizing claims, crystallized texts gain a level of reflexive validity" (Ellingson, 2009, p. 15). In this way, the research validity was revealed through new understandings as the crystallization methods were applied to research artifacts.

Trustworthiness and credibility of the research findings became evident in the depth, complexity, and rigour evidenced in the constructions created (Stewart et al., 2017). Authenticity

and dependability were revealed, not as an absolute truth, but in the reported reflexivity and interactions between researcher, researched, and research data re-visualization techniques (Stewart et al., 2017). A trusted and reliable representation of the research data emerged from consistently comparing, reporting, sharing thick, rich descriptions of the data, and providing a chain of evidence for field notes, memos, member reviews, debriefs, engagements, observations, frameworks, typologies and recreations (Stewart et al., 2017). By preserving links and threads through the research process, readers may recognize the logical paths and recursive steps I took, in ways that are methodical, transparent, and adhere to best practices for data management (Stewart et al., 2017). As an example, by providing a word cloud visualization from a participant's video interview transcript as an alternative presentation for the coded data collection, the readability of the resulting analysis improved. In this way, researched and reader can recognize how I, as the researcher, dependably managed the alchemic and crystallizing data analysis strategies.

3.2.7 Ethics

> Data are never neutral, but always already imbued with discourses of power within local, national, and global contexts that perpetuate massive and tenacious social, economic, and political inequities. For these reasons, data engagement must entail ethical choices in the context of research trajectories. We advocate for three commitments, or underlying ethical sensibilities, to infuse the making, assembling, and becoming of data: pragmatism, compassion, and joy (Ellingson & Sotirin, 2020, p. 11).

Although these ethical sensibilities were foundational to this research, it was the basic tenets of ethical research that grounded this work. These included the "fundamental rights of human dignity, autonomy, protection, safety, maximization of benefits and minimization of harms, or, in the most recent accepted phrasing, respect for persons, justice, and beneficence" (Markham & Buchanan, 2012, p. 4). Farrow (2016) outlined an ethical framework when considering research

into OER and OEPr which included respect for participant autonomy, avoiding harm and minimizing risks, considering full disclosure, establishing privacy and data security parameters, integrity, independence, and informed consent. These elements were woven into the considerations and decisions I made for/during this research. Additionally, I used and referred to the *Tri-Council Policy Statement* (TCPS-2) *on the Ethical Conduct for Research with Humans* (Research Council of Canada, 2014, 2022) and the Association of Internet Researchers (AoIR) recommendations (franzke et al., 2020; Markham & Buchanan, 2012) to ensure my awareness and compliance with current recommended ethical guidelines for Canadian and digital contexts. The ethical considerations for this research were premised on my beliefs about respect and relationship. It was important for me to be explicit to participants and readers that care and respectful practices were foremost considerations, despite the premise of doing no harm that was implied when following the TCPS-2 guidelines. Although allowing for participant agency and voice through open sharing with informed consent (Moore, 2012) may appear to be self-evident in research about open educational practices, I erred on the side of caution by maintaining a strong stance of anonymity for the participants. In this way, I hoped to capture an honest and open story in the sharing of challenges that point to systemic and institutional barriers to becoming media or digitally literate open education practitioners.

Ethical decisions were based on "norms, values, principles and usual practices" (Markham & Buchanan, 2012, p. 4). Privacy and confidentiality of web-based information such as social media accounts, course syllabi, and university specific data available on the internet are considered non-intrusive since there is no direct interaction with the researched individuals. Such data gathering does not require REB approval (Research Council of Canada, 2014). These digital artifacts can divulge participants' openly available OEPr and MDL, as revealed in their internet related "documents, records, performances, online archival materials or published third party interviews" (Research Council of Canada, 2014, p. 16). An initial examination of participants'

open and online digital artifacts was conducted prior to REB approval in order to scan for potential participants, but I erred on the side of caution (Seko & Lewis, 2017) and held this data in confidence pending the signed consent form. Once consent was received, gatherings from these openly available internet sources were further assembled and analyzed.

I was vigilant to the ethical issues of data engagements as being "inevitably cultivated and curated by serendipitous algorithms and other computational logics" (Ellingson & Sotirin, 2020, p. 75). I curated these data gathering explorations as a means of discovering elements relevant to participants' individual identity, or specific texts that modelled or exemplified MDL practices. I resisted the urge to aggregate or crystallize this content into other genres so as to honour the individuality of lived experiences, voices, and stories as shared through text, audio, and/or video formats.

As I shifted into direct engagement with participants through the recorded interviews, I confirmed that participants were treated fairly, equitably, and justly (Gupta, 2017). The research ethics approval and informed consent ensured that participants were aware that: a) data was treated confidentially by default; b) that identifiable information would not be shared openly; c) that the data was only used for scientific and non-commercial purposes; and that d) they could withdraw their consent at any point during the second phase of the research (Caliandro & Gandini, 2017; Saunders et al., 2015). I verified and made explicit, through the informed consent form, the procedures for privacy, informed consent, anonymity, confidentiality, security of data, and transparency. These were reviewed as I initiated the direct contact during the interviews. Additionally, participants were assured in the recruitment letter, the informed consent, and in the introduction to the interview that they had the right to withdraw at any time up to the time of data analysis by communicating this desire in either an email or phone call. With their experiences in open educational practices and research, participants were cognizant of cookie policies, terms of

service, and privacy statements for the web-based services used, so these were not explicitly addressed for the ethical considerations for this research.

I ensured transparency and autonomy in my recruitment of participants by clearly describing the research purpose, details, and any perceived risks and benefits (Gupta, 2017). This was provided in the recruitment letter and informed consent letter, but was also described in a pre-recorded video message which afforded the participants an early opportunity to see me as the researcher. Although I did not perceive this to be a primary concern, but in order to manage potential identity fraud (Gupta, 2017), I used a consistent means of contact primarily through email, but also through direct messaging on my cell phone. I did not apply an identifying secure-code such as those used by Captcha because I sensed it was not necessary for this research.

To address potential concerns of internet breaches of data, I maintained an external data storage device - a dedicated universal serial bus drive - which was locked in a secure location. The external USB device was used to store and backup all research data. I ensured privacy and confidentiality by assigning a pseudonym, a randomly generated avatar image, and also consistently used 'their' or 'they' rather than gendered pronouns such as she/her or he/him. The confidentiality of web-based data such as blog sites, tweets, or posts was ensured through the use of the pseudonym identifier. As well, I randomly changed the password used for the web-based services applied to this research.

Since the research summary was shared in an ALT-DISS format using open web publication in Scalar, when screen images or other recognizable information were captured, all identifying details and meta-data was pixelated or removed prior to being used. Direct hypertext links to participants' web-based data were not included in the research report or the ALT-DISS Scalar location.

In summary, "ethical decision-making is best approached through the application of practical judgment attentive to the specific context (what Aristotle identified as phronesis)"

(Markham & Buchanan, 2012, p. 4). All potential ethical guidelines for the context of this online and web-based research were reviewed and enacted, with a consistent schedule throughout the research project. Although the purpose and intention of this research was focused on opening discourse and research results using an accessible web-based portal, the ALT-DISS format of reporting research results required continual vigilance to maintain confidentiality, privacy, security, and autonomy of participants' data.

3.3 Crystallizing the Research Design

As I summarized the research, I crystallized the processes and productions found in this dissertation. These were reflective of the theoretical and conceptual frameworks upon which this research was grounded. These frameworks were foundational to the post-intentional phenomenological methodology and the crystallization methods selected and outlined for this research. The explanation for using the term data gathering rather than data findings related to the frameworks and methodologies. Research phases and timelines provided the details of the actions I conducted and the sequence in which they were completed. This included the preparation, the interview, and the data analysis phases. Although descriptions of participants' contexts and geographic locations were not shared, the processes and reasoning for creating pseudonyms and avatar images supported my efforts to maintain confidentiality and still be as open about the participants' lived experiences as possible. The credibility and trustworthiness of this research was grounded and consistent with the interpretivist, socio-constructive paradigms applied to this research. Ethical practices, as guided by current research and documentation, were foundational to the research design. In these considerations, I trusted that design of this research inquiry matched the purpose and directions established, in order to achieve possible answers to my research questions. In the next section I examined the gathered information from the participants' lived experiences and stories of their MDL as revealed in their OEPr.

Chapter 4: Data Analysis and Findings

A Diamond in the Rough

"Playing with participants, data, and representation creates opportunities for humane, profound, and pragmatic research processes" (Ellingson, 2013, p, 196)

Within this research study, I explored the lived experiences of teacher educators in Canada with a focus on MDL within an OEPr. In this post-intentional phenomenology, fourteen participants revealed their stories of becoming media and digitally literate within an open educational practice in the field of teacher education. The focus here was on describing the facets of the lived experiences of participants – becoming a teacher educator, experiencing an open educational practice, modelling media and digital literacies - and how MDL influenced OEPr in a teacher educators' teaching practice. As these facets of the participants' stories are shared, it is important to note that this research is not framed as findings in the traditional research sense. This is framed as a generated narrative, excised from the data gatherings. This narrative is not the only possible narrative found within the participants' lived experiences, but ***one*** story, created and crafted as a representation from the accounts and images of others.

In the research design section, I outlined the phases and sequence of data collection, coding and analysis. Over multiple episodes of listening and relistening to the narratives presented by the participants, I "pay attention to personal preferences and desires, what I care about and what excites me" (Ellingson, 2013, p. 201). Throughout this process, I struggled to make sense of the individual voices and images. At times, the participants' meaningful moments coalesced together. Through the multiple and many layered listening moments, I paid attention to the outlines of what was important to each participant because these needed to meld into my research story. In order to stay true to the narratives shared and not become distracted while

writing about the participants' lived experiences, I held in mind the collage of images and echoes of our recorded conversations (see Figure 19 in Appendix G).

As I recursively explored and experienced the video interviews, between bouts of reflective sense-making, these etches supported my struggle to find commonalities and to create a unifying story of the stories shared. Despite a deeper dive into reflective thematic analysis (Braun & Clarke, 2021; Braun & Clarke, 2022), the themes that I strived to find from the codes and keywords eluded me. As a result of this struggle to find the research story, I returned to reflect on my stated methodology of crystallization.

The decision to examine one facet at a time allowed me to focus my attention on singular components within the findings, just as a gemologist might take time to examine the façade, edges, colour, tone, and reflections found within the identified facet of a diamond in the rough. My decision to hold up and examine the words, sentences, and ideas expressed by the participants creates a semi-cohesive way to uncover participants' portrayals within the research findings. The answers to my research questions emerged from this diamond in the rough.

4.1 Facet One – Becoming a Teacher Educator

> "Education is not an affair of 'telling' and being told, but an active and constructive process." John Dewey

From the lived experiences shared by the fourteen participants, I illuminated participants' human endeavours of becoming teacher educators. Their journeys resonate through these anecdotes. This is the first facet in the data gatherings that I scrutinized in an effort to answer my research questions. Images of teacher education emerged from these reflections of the participant's lived experiences. By glancing through this facet, I learned more about the essence and intentionality of the participants. Relationships with technology and with the world in which they teach became apparent. For a clearer understanding of defining characteristics of teacher education, it

was helpful to review the literature for this concept (see Section 2.2.1 on teacher education). Keeping participants' pseudonyms and avatar images in mind became necessary (see Figure 19).

Eleven of the participants had foundations in the field of education, having gone through a teacher education program and worked as a teacher in K-12 education. Fields of interest varied from science (Rigel), social studies (Aquila), physical education (Carina), and language and literacy (Dorado, Leonis, Orion). Two participants related their experiences as second language learners which they indicated had influence over their work as teacher educators (Merak, Vega). Two commented on the impact of being a first-generation post-secondary school attender (Perseus, Vega). For six of the participants, becoming a teacher educator was a natural progression emerging out of their PhD level graduate studies and dissertation work (Aquila, Carina, Dorado, Izar, Lyra, Merak). Others transitioned into teacher education through Masters graduate studies (Merak, Perseus, Polaris). For some, the shift to teacher education happened when their own children were born (Andromeda, Leonis, Lyra, Rigel, Vega).

> *I taught for almost a decade, and I had two children, and took a different look at education … I went back and did graduate work around the sort of questions that I was seeing when I was teaching. So, most of my research is built on, I wonder questions (Carina).*

Three participants created and designed new graduate level programs and courses within their faculties of education (Carina, Lyra, Orion). Most participants shared experiences of designing learning and curricula within their faculty programs that reflected current educational trends and infuse technologies (Andromeda, Aquila, Leonis, Perseus, Polaris, Sabik, Vega).

> *Right now, I'm trying to figure out how to develop some kind of tool, so children can put images online and share them with each other and talk about them in the way that we do on Instagram, or Facebook or something like that. So, I'm trying to deal with the ethical challenges around that (Dorado).*

Several participants noted their role as leading edge innovators in online course design (Andromeda, Aquila, Izar, Orion, Vega) which inspired their open learning practices. Others disclosed their feelings of responsibility to share their experience and expertise, not only with their students but with colleagues and others around the world.

> *I think it's largely educators have that philosophy at their core. It's about, you know, spreading knowledge and sharing ideas and inspiring minds. And whether that's through a great story or a fantastic open resource that you share. I mean, the reach is further, if you can do things digitally and see some of the impact you're having. But I think that philosophy has been there for a long time amongst educators (Izar).*
>
> *Fundamentally, my lived experience has grown to recognize that I've got a responsibility too. I am a public servant. And so, for me, I do feel that I've got a responsibility to the public, I serve to ensure that the work I'm doing is openly accessible (Vega).*

With schools and schooling framed from perspectives of knowledge scarcity and the "*technology of the book" (Lyra),* participants worked within their experiences to push understandings of knowledge abundance and teaching with digital and electronic technologies. This required ongoing learning and reflective practice. From their lived experiences, the participants revealed that their own ongoing professional learning journeys, particularly when developing technology related skills, were predominantly informal and self-taught, often done through web searches, trial and error, or exploration:

> *I don't make a big mess or anything. It's just like, oh, that doesn't really work the way I want. So, I just try something else. You know, once you get the standard layout of most software, there's going to be a menu, there's going to be the things you need, try them out, see what you want to do (Rigel).*

Participants mentioned that their learning happened serendipitously through connections, research projects, or conference attendance. Many pointed out that they explicitly and implicitly

passed this learning on to their students through the courses they taught. Although one person specifically noted their intentional stance as a learner, this outlook can be seen as a tacit feature of other participants' ongoing learning:

> *I think that it's a lot of learning on my own, and then trying to leverage that. I've always positioned myself as a learner in those contexts with my students. I think in some ways, it's helpful that I … have that kind of learner perspective with them as we're working (Merak).*

Proficiency and interest in applying technology to teaching and learning was evident in the lived experiences shared by most, but not all of the participants. These experiences in using technologies as a teacher educator were lived through and any reluctance or phobia to technologies are overcome. One participant shared their curiosity:

> *Much of that was certainly informal. I was always a little bit adept and interested in educational technologies. And so, I remember, you know, my curiosity and seeing some of the value in, for example, I remember like in my grad studies early on wanting to present kind of multimodal papers and wanting to remix images, or add video (Merak).*

Yet another shared their initial reluctance in using digital tools in their teaching:

> *I was technophobic, I had no interest in digital technologies … I don't like playing games on the computer, had no interest really and I wasn't super comfortable with digital tools (Polaris).*

One participant suggested a need for teacher educators to take a stronger stance toward teaching from a critical disposition that was grounded in current research, particularly in the face of political agendas that opt to define digital literacies from a focus on job-readiness skills. Another mentioned the importance of:

> *community consultations, professional learning networks and knowledge mobilization strategies, where we lean on collaborations for educational research, what we can learn*

> *from that, but also what educational researchers can learn from people, from teachers and principals and school board directors, to try to kind of address some of that in the programming for teacher education, and that would include technology (Vega).*

The participants' lived experiences included becoming, and modelling for their students how to become, a connected and networked educator. Although this facet amended the work of becoming a teacher educator, it was also evident in the participants' OEPr.

> *"I encourage open, collaborative, networked learning in digital spaces because I believed, in past, that learning to participate online and adopting an open disposition can bring educators together around ideas, promote professional learning, and a sense of agency in digital environments" (Perseus, digital artifact).*

With these anecdotes there is evidence of various common elements within the lived experiences of the teacher educators who participated in this research. The commonalities illuminated some specific facets of becoming a teacher educator – foundational experiences and awareness of the field of education, building a teaching practice grounded in research relating to teaching practices, bringing personal interests in specific subject matter into the field of education, developing program and course designs through iteration and student feedback, and being positioned as a life-long learner.

4.2 Facet Two: Open educational practices (OEPr)

"The essential thing … is this: hope, as an ontological need, demands an anchoring in practice" (Freire, Pedagogy of Hope, 1992)

I searched through the gatherings for an answer to my research question – As a teacher educator in Canada, what is it like to be an open educator? I probed each participant's lived experiences of OEPr and specifically asked them to identify essential tenets of their OEPr (see Appendix D). For a clearer understanding of OEPr, I returned to review the literature for this concept (see

section 2.2.2). The graphic rendering of conceptions of OEPr were also helpful (see Figure 7, Figure 8).

Although not every aspect of the participants' lived experiences with OEPr were reflected here, the selected accounts generated from the data gatherings highlight facets of OEPr as I reflected on MDL in practice. From the participants' responses, I selected three facets for scrutiny. These include access, choice, and connections. I began by examining the origin stories and concluded with a summation of the generated themes and core elements of OEPr.

Origin stories

Lived experiences with OEPr have origin stories. Most origins in OEPr do not begin with a cataclysmic event, but are emergent and fluid. As I glimpsed these origin experiences facets of OEPr crystallized. For one participant, becoming an open teacher educator emerged from an early experience of teaching others how to canoe:

> *So, I was instructing them how to hold the paddles and we were all standing on the dock because we're all going to get into our own canoes. I explained, this is how you hold the paddle, and then I looked up and I remember seeing all the different ways that they were holding their paddles. And I'm thinking is this what learning is all about? Like I just told you, this is what you need to do. And yet you're like, we're not even in the water, you're not going to get anywhere. I remember that moment. And I think that open learning gave me that opportunity to let everyone paddle their own way (Andromeda).*

Polaris reflected that

> *it didn't even occur to me that I was engaged in open educational practices … I hadn't realized that what I'd already been doing (blogging & engaging my students with online publishing) had a name and was, in fact, a burgeoning movement!*

Some participants suggested that elements of OEPr were embedded in their philosophy and beliefs of how teaching should occur (Carina, Leonis). For one participant the impetus that

pulled them to "*open education is the social justice side, the decolonization has been really important to me. So, moving away from Western perspectives" (Sabik).*

For Andromeda, Aquila and Izar the origin story of OEPr occurred through experiences of focusing their dissertations on open education related topics. For Lyra it was the experience of *"sharing my dissertation online, while not very exotic today, given the plethora of digital repositories full of theses & dissertations, was a bit unusual when few dissertations were open access".* Lyra noted the impact of openness in their scholarly work:

> *You know, so I think that openness and trust, the peer review, I learned early in my career, early as a scholar, that scholarly community of inquiry, when held in the open raises the level and quality of the work, because people all of a sudden realize it matters; what I put out there and attach my name to matters.*

Andromeda, Aquila, Izar and Rigel reflected on experiences with free and open-source software and working with software development relating to education. For example:

> *I looked at open-source ideologies … so, my dissertation work was around the idea that, how do we apply these not only the methodologies, but also the ideologies around open-source practice into teacher communities … it was based on looking at open-source communities and seeing them as rich collaborative spaces (Aquila).*

Another mentioned that their OEPr emerged, not from explicit institutional supports, but from the influences and directions offered by colleagues or others in educational technology who *"share their kind of reflections and questions about what it means for them to be a teacher or a professor"* (Merak). For Vega the lived experience with open education was grounded in feelings of unconditional hospitality and ethical relationality, which I perceived to be connected to ethical practices of care, compassion, empathy, openness, and respect for human dignity:

> *… openness to ideas, and to listening to each other, to being attune to your intents of being there and impact so that when you're there, you're not trying to harm someone,*

> *like openness is not like open to being harmed. So, I think that the unconditional hospitality is to kind of recognize that when you're a guest in someone else's space, then there's certain roles and responsibilities* (Vega).

From these origin stories of participants' lived experiences within OEPr, I noticed that negotiations appeared to reverberate through many of the interview transcripts – the *"open learning part of the negotiation is working with your current context, cultural context, current boundaries, current world and then negotiating that that's part of the negotiation as well"* (Andromeda).

In an effort to gain clarity, the facets that are explored next are cleaved into subsections to better describe each element. Access is explored through notions of entry, intentionality, and language. Choice is examined through experiences with sharing, contributions, and agency. Connections are revealed through relationships, collaboration, and building on the learning of others.

4.2.1 Access

Access included lived experiences with entry into connecting with people and openly using materials and tools that support their work in teacher education. The conception of access being used here should not to be confused with the notion of accessibility which focuses on the access needs of differently-enabled populations. Although accessibility is a consideration for OEPr, for reasons of brevity it is intentionally omitted here.

4.2.1.1 Entry

One participant suggested, from their lived experiences with entry for their OEPr, that it was important to consider using teaching resources that are *"visible you know, not behind paywalls"* (Polaris) and to avoid using technologies *"that require students to sign up"* (Polaris). For Andromeda and Merak this meant that entry into learning opportunities were open to *"people outside of your class, outside of that specific group would also have access and it's something*

that you would allow people to share" (Andromeda). For Orion their experiences with access to massive open online courses (MOOCs) highlighted the complications created when MOOCs are used as entry points into what they view as pedagogically flawed OEPr:

> *Because you can have a MOOC that is open access, that you go through this didactic pedagogy. And yes, it's open access … so, if you're saying open is this wonderful, pedagogically rich, amazing student voice thing? And that's open education? No, check out the MOOCs that are out there. They're open education. They are NOT pedagogically beautiful and rich many of them. So, I think we've got a problem ... I've heard others say but it's working, it's going to hook people in higher ed to change their pedagogy with this open ed branding by broadening it. I just think that we're creating more mess just because we want to market it* (Orion).

Frustrations with lived experiences in gaining entry and access were expressed by Carina and Polaris specifically to materials and resources available to K-12 teachers in their province but not available to those in faculties of education working with teacher candidates in that same province. They questioned the public nature of publicly funded materials and resources that are kept closed to those who could make use of those teaching materials. Another participant stated that *"SHRRC requires open access for research. I still don't understand why we are any different with courses?"* (Orion) and suggested that open access could be part of an institution's public relations and accountability measure.

4.2.1.2 Intentionality

For Perseus, their OEPr was

> *absolutely a process of becoming … because there certainly are parts of my professional life that aren't open to others. So, I do make intentional choices. But my process of becoming an open educator, it's … rooted in my own values around access.*

Sabik wondered if "*students always know that I'm using, intentionally choosing a textbook or a chapter that's open source or readings*". This intentionality extended to open discussions with students:

> *...about what technology I use in the course, because surveillance technology, like where's your data going? ... it'll come up in the class, maybe some times where we'll start talking about, you know, just maybe using proctoring or plagiarism software ... and I'm very clear about why I don't use it* (Sabik).

Since Vega had lived experiences with creating and recording podcasts, intentionality shaped the decisions and processes of presenting information to an audience, be it students, colleagues, or outside the learning organization. Vega recognized that whichever "*mode that you're choosing is going to have certain possibilities for open access and limitations, for different people"*.

4.2.1.3 Language

Language, as an access issue, was not just about the word choices being used, as Orion suggested in the statement *"... semantics matter. Terms matter. Definitions matter"!* Vega mentioned how language influenced their OEPr, particularly when considering the access to teaching content for a specific audience:

> *I think about creating content and related to open access is one in terms of writing. What I try to explain to my students like, Look, if a grade 10 student and I can't understand the gist of what you're trying to explain, then you haven't clearly articulated. I don't care how complex the work you're doing, but I think it needs to be written in a language that's accessible* (Vega).

Canada works in two official languages, yet Indigenous language and the multitude of languages from immigrants and refugees were noted in the participants' lived experiences. Issues of language translation when considering OEPr was noted by five of the participants (Aquila,

Leonis, Merak, Perseus, and Vega). Access of materials in the preferred language of the intended audience was a consideration for Merak and Vega. As Perseus noted:

> *there's an important role for those of us who are bilingual, French-English, I do feel increasingly like a profound responsibility to ensure that whatever it is, that I'm thinking about can also be accessed by my Francophone colleagues*.

Merak noted that the "*meaning behind the language in which it is accessible or not, the ways in which that limits participation or learning opportunities*" was important when creating and sharing open teaching materials and resources. For Merak, this meant ensuring that openly accessed French/English resources were representative of a high standard and reflective of their professional identity. Additionally, Vega pondered about access and language by adding consideration for gender neutral language by *"trying to become more aware of that, but also open access in terms of use of language in French like, so gender neutral language, for example, and how we present that when writing in French or even thinking about that in English."* So, I noticed that for some of the participants, language as an access issue was an important facet of their OEPr.

4.2.2 Choice

The lived experiences for teacher educators who practiced their craft openly meant providing choice in learning but also making choices for themselves as educators and researchers. This ranged from course design where access to tasks and activities were openly shared, where contributions were made and accessed in a variety of locations and modalities, and in recognizing issues surrounding agency and ownership within their OEPr.

4.2.2.1 Sharing

All of the participants mentioned sharing processes and work products with colleagues and students. Rigel mentioned "*sharing your process is a form of open pedagogy for me, so I feel like*

there's a spectrum of sharing more broadly, and making it accessible for a broader audience is really helpful". For Merak, this involved practices that are

> *more fluid or natural … because you've had access to that teaching explicitly or implicitly, versus someone else needing to say this is how you could perhaps better organize your desktop or your digital spaces.*

For Perseus the issues and risks surrounding the open sharing of teaching and learning, particularly for marginalized students, revealed concerns with *"whose needs, voices, insights are silenced or left out when we work in the open? Do we lean into difficult conversations about the risks of open"*. The social justice side of open education was important to Sabik who noted their efforts to give *"voice to scholars and to educators, to students, who traditionally don't get to have their voices represented"*.

The OEPr for Sabik and Rigel included consideration of how students are presented with options to share their learning beyond the "*disposable assignment*", described by Wiley (2013) as those tasks such as essays or exams that add no value to the world, since they are thrown away and forgotten once they are completed. Rigel provided choice as a gateway *"for students to become more open about how and where they share their learning"*. Dorado suggested limiting choices for student assignments to a few selected tools that provide flexible options for sharing, since this can enhance creative outputs. For Aquila and Orion this meant including in their teaching practice the use of *"aggregation and having students have their own space"* to share their learning. Lyra reflected on their lived experiences:

> *In my teaching with both undergraduate and graduate students, I have always tended to include an assignment or two that involves online sharing, from student created blogs, podcasts, wikis, VR spaces, microblogging and twitter chats, and various types of co-created or individually created websites.*

One caution posited by Andromeda, but reflected in the responses by others, was that sharing is *"a negotiation and co-design between an instructor and the student to support their learning pathway on their learning journey"*.

4.2.2.2 Design

Within the lived experiences of over half of the participants (Andromeda, Aquila, Izar, Lyra, Orion, Polaris, Rigel, Sabik), the design of their courses with OEPr in mind, became an opportunity to co-create learning materials and activities with their students. It was less about the digital tools or educational technologies selected and more about the pedagogical practices. For example, Merak mentioned, *"it's not about the tools anymore, or how to set up your classroom online, or how to make videos or interesting content, it's just going to be about the pedagogy that drives those choices"*. Further to this, Merak noted, *"I will share with my students some of the decision making behind certain choices, which I think also allows us to have these conversations"* about course designs. Andromeda also mentioned that *"I've done aspects of this by having a more fulsome conversation about course objectives, like what do we hope to get out of this course? Right? Because we're really having more of a conversation with students about co-construction."* Making choice explicit within the design of courses and lessons was one of the many essential tenets of OEPr shared by the participants.

4.2.2.3 Agency and Ownership

Making explicit choices about agency and ownership was reflected in each of the participants' lived experiences when selecting open tools, resources and processes. Agency with technology and ownership of the resulting content was an OEPr consideration. For example, Rigel followed a self-imposed guideline to *"not become platform dependent"*. Rigel reflected:

> *... my solution has been to be as much tech agnostic as possible, get to the core principles of the pedagogy. Like I love technology, but I also recognize the dangers inherent with the people in control of many of them. So, we have to sort of strike a*

> *balance. So, I've always been more on the side of open source. Even that is not a silver bullet, because that gets bought out, you know, or are not institutionally supported.*

For Lyra their agency focused on the learners and the participatory nature of their OEPr:

> *... so, learner centered to me is agency and voice, because that starts from a deeply held belief that, you know, students come at any age, they come with many lived experiences and social connections and, you know, experiences in the world that they draw upon, no matter what the learning task is. I may know more about a particular part of that task, and therefore, I'm providing some of the boundaries. But I always want to keep those flexible as well, you know, so I think flexible boundaries would be how I would describe a lot of my practice.*

Flexibility was also mentioned in the lived experiences of Aquila and Izar. For Izar this

> *... comes into teaching in all kinds of different ways. But I'm also very careful not to push people out there. It's really a personal choice, how you want to engage or how much you want to contribute. So, we do focus on it as a resource, and a community to join and contribute to, but that may come later, for some of them.*

4.2.3 Connection

This facet enlightened examples of lived experiences where participants established relationships within their OEPr by making connections to others, particularly as they established collaborative practices with students and colleagues. Participants also shared experiences of connecting ideas, people, and teaching in ways that built on the shared learning of others.

4.2.3.1 Relationships

From the participants' lived experiences through/with technology, particularly resulting from the pandemic, many focus on challenges of how to build and maintain relationships. Vega suggested that *"the COVID-19 pandemic accelerated an openness to building community online."* Dorado reflected that relationship building required active listening, not just delivering messages, and

that this happened along a continuum from short term contacts to longer term, deeper connections precipitating through trust.

> *I think that whether it's between teachers and students, or researchers and participants in online spaces with distant others that you may never ever see in person, I think that kind of relational work has to happen, especially if you're doing critical literacy work, because you've got to have a lot of trust* (Dorado).

For Aquila this linked back to experiences and relationships developed over time, where geographic locations mattered less and maintaining relationships mattered more: *"I guess, you know, the idea that we're better together, that our voices matter from any place that we can find, we can build closer relationships with people that we don't necessarily know, that's the strength of weak ties".* For Vega, this relationship work required *"unconditional hospitality"* described as recognition "*that when you're a guest in someone else's space, then there's certain roles and responsibilities. But also, when you're hosting a guest, there's roles or responsibilities. So that relationship between guests and hosts, it goes back and forth"*.

Lived experiences for Perseus focused on relationships with students and that *"often, we forget that that relationship is imbued with power"* and that relationship building work is human work:

> *I think that truly profound and humanizing connection is absolute. It's always been essential, but it is even more essential now, in my view. One of the things that I think for teachers to bear in mind, and it's an important consideration from Nel Noddings' work for me anyway, is that oftentimes we enter into a relationship with our students as teachers, with the intention of providing care with the intention, of course of respecting those ethical standards of practice* (Perseus).

This intentionality in Perseus' lived experiences of OEPr highlight the need for humanizing the learning experiences for their students from a caring stance, one that encompasses compassion,

empathy, fairness, honesty, openness, and respect for human dignity. From this comment, I gained insight into Perseus' perspective of relationships with students that addresses power differentials between the perceived or real hierarchical positions between students and educators.

4.2.3.2 Collaboration

Experiences with collaboration ranged from research focused projects to classroom teaching activities. In the OEPr responses from Leonis, Lyra, Orion, Perseus, Polaris, Rigel, Sabik, and Vega, options to collaborate and communicate were prominent in their shared experiences. Research collaborations for OEPr appeared to emerge organically. For Leonis, it started with collaborations in their PhD dissertation work, leading to a SSHRC grant where the collaborators "*were actually on my research team. And they were the video people that would come in. And we'd always start out with them talking about their experience making video on YouTube and sharing positive and negative obviously".* Leonis suggested that *"the digital tools allow us to collaborate online, for example, it doesn't have to be online, but let's just that's where I've been lately"*. For Merak, thinking about collaboration

> *shows how embodied a lot of experiences are for students and so how they are building community and are able to develop, for example, digital literacies, and different competencies online collaboratively and physically with other students in the classroom and engaging with one another.*

Polaris shared experiences of collaboration that involve mentoring: *"the early career mentoring I received from a colleague who became a trusted mentor, co-teacher and friend, opened an opportunity to collaborate with experienced teachers"*.

4.2.3.3 Building on the learning of others

Within the lived experiences with OEPr, several participants mentioned that they made an effort to build connections with experts in their field of study and bring outside experts into their classroom teaching. Aquila suggested: *"it's really about connecting with expertise in different*

ways and showing students that they can connect not just to databases and resources online, but can connect to the people behind them". Aquila and Lyra mentioned they reached out to authors of papers they had critiqued as a way to build on the ideas presented by these other scholars: *"I think we need that connection with experts, you know, or, yeah, things that we know work and in different ideas, not the same ideas … as we already had"* (Dorado). In recognition of the knowledge and time shared by experts, Lyra expressed a *"deep respect for these individuals and also a deep awareness of their generosity and willingness to connect. So, you know, often in classes, I'll tell the students well, if you're interested in (named author's names), reach out to them"*. For their own research and knowledge sharing, Izar made efforts to *"try to make outputs open, try to make as much of the teaching as possible, open, because it can have effects that are interesting, if you make a connection with another educator"*.

In summary, the facets of OEPr generated from the data gathered for this research showed specific faces and edges to the conception of what it meant to be a teacher educator who modelled an OEPr. Themes surrounding access, choice, and connections were evident in these narrative fragments. Issues of access revolved around the edges of entry, intentionality, and language. Sharing, design considerations, and agency were features when participants contemplate choice-making in their OEPr. Facets revealed in connecting as part of an OEPr for teacher educators included how to build and maintain relationships, engage in collaborations with others including students, and connect to expertise in order to build on the learning of others. In the next section, the media and digital practices found within an OEPr are explored.

4.3 Facet Three – Media and Digital Literacies

"… knowledge emerges only through invention and reinvention, the restless, impatient, continuing, hopeful inquiry beings pursue with the world and with others." Paulo Freire

In this section of the data analysis, I restlessly and hopefully explored facets of participants' lived experiences in search for an answer to the research question "How do MDL inform or

shape practices of teacher educators immersed in OEPr?" For a clearer understanding of conceptions and understandings of media and digital literacies, it was helpful to review the literature (see section 2.2.3) and revisit the visualizations relating to literacies (see Figure 9) and the graphic of the interconnections between skills, fluencies, competencies and literacies (see Figure 10). I began by examining participants' understandings of MDL concepts. Then I focused on the facets found within the themes of communication, creativity, and criticality. I concluded with a brief summary of the findings generated from the data gatherings.

Understandings

When prompted to describe media and digital literacies as experienced in their teaching practice, participants portrayed MDL as multifaceted, complex, and value laden. Perseus' response resonated: *"I've defined digital literacies as all of the skills, strategies and mindsets, dispositions required for making meaning and communicating meaning through and with digital tools"*. Dorado defined MDL by separating the terms, with media being the message and digital being the means of communicating the message.

The multifaceted and transmedia nature of MDL was evident in participants' responses, since many included elements of creating and engaging with alternate forms of communication beyond traditional text formats. Complexity within MDL is partly defined and shaped by the tools used and their affordances since "*tools/things have some agency"* (Dorado). This complexity was both opportunity and challenge, as noted in Leonis' reflection that "*we need to know better how to work with that complexity and the layers and how to do all those things at the same time, pull them apart and then put them back together*".

Some expressed belief that MDL involved value-laden judgments and biased decision-making about the intended purpose or audience of materials and productions. Some participants mentioned the need for a critical stance – "*the digital allows you to take it into that productive*

space with a critical perspective" (Leonis). The values attached to media and digital tools, strategies, and productions were evident in participants' expressed competence and dispositions.

The goal of MDL for some of the teacher educators focused on developing their own skills and competencies. This connected to student learning by helping "*our teacher candidates develop theirs, so that they in turn, can use digital literacy frameworks, and support their students in developing their digital media literacies*" (Polaris). Some participants mentioned specific MDL frameworks they used in their teaching practice, including the MediaSmarts framework and the International Society for Technology in Education standards for teachers.

4.3.1 Communication

Participants viewed communication as being predominantly web-based, particularly in light of COVID-19 responses, with options of being open to others. Their awareness of media related factors in their communication practices, such as audience, ethics, and data management, were evident in their shared stories. Andromeda, Aquila, Izar, Perseus, Orion, Rigel, and Vega reflected on how communication, particularly for their students, needed to extend beyond the physical classroom, through the use of a variety of digital tools, resources, and activities. For a full list of these digital tools, as mentioned by participants, see Appendix F. For Izar, this included students' work on blogs:

> *...they're working in WordPress, developing reflections based on the course material, personal project inquiry that they document. And then they do a final presentation that's often shared there as well. But all of those things, you can make the whole site private, or you make it just visible to our course community, or you can make individual posts or pages private. And so, they get to see all the different ways they can permeate while still working in the web.*

Experiences with online web-publication work with students became ubiquitous. With OEPr during the pandemic, Carina stated "*digital communication has become mainstream*" and

suggested this helped increase feelings of fluency and competence since students were immersed within wider audiences. Andromeda took a critical stance toward communication, asking students to examine media messages for validity by interrogating "…*is this a valid source? Kind of what makes it valid? What are they citing? How do I know that this information is true?*". For Vega, open communication was identified as a duty and calling: *"I'm hired as an educational researcher here, theorist. I'm supposed to be working on behalf of Canadian citizens. And so how can I create communication ecosystems so that they can access some of the work?"* Communication was an essential component of the participants' lived experiences with MDL in their teaching practice.

4.3.1.1 Audience

One participant pondered the need for an audience for their communicational practices. Other participants questioned who the audience was when creating media and digital communications for their own and their students' purposes, even identifying self-as-audience. For Rigel this extended to ensure that "*the purpose that you're doing it is not just performative for the whole world that you actually are doing it because students will feel the value*". For Vega this meant recognizing "*... your audiences. If we're talking about access, I think you need to recognize who's, which audiences are you trying to communicate with, and then how accessible in terms of have open access is what you're trying to communicate*". Lyra suggested keeping audience in mind when making critical decisions about "*what you're comfortable sharing and what you're not comfortable sharing*".

Rigel commented on their practice of flipping between an audience that involves students, the audience of colleagues, or communicating on the open web to unknown external others. This practice required a flexible approach to communicating with media and digital resources and suggested to students and colleagues that they:

> *start where you are, there's little things you can do. To get to get there, you don't have to be perfect and polished at the end, it's just sort of like, we're really, let's go back to the purpose. So, if you can communicate effectively, and use a little piece of media, beyond like walls of text, let's think about what that could look like.*

For Dorado this included a continuum of MDL ranging from simple to complex in their attempts to build a relationship with the intended audience, one that emerged as visceral and multimodal.

4.3.1.2 Ethical Practice

Some of the ethical challenges in communication practices, as experienced by the participants, included contending with decisions such as where, when, how, and with whom to share. Explicit communication of ethical practices with students was a common thread throughout many of the participants' lived experiences. Aquila's statement was reflective of many others that share this perspective:

> *I'm sort of future centric and tech centric, or future leaning, but I have a very strong foundations perspective as well. So, this is really important, because it's really the center of all these things, because we can't use technology without that ethical lens, without understanding the techno-colonialist implications of our technology.*

In reflecting on the work of teacher educators, for Lyra this meant "*bringing people along, in a good way, and in an ethical way, because yes, they're, you know, they are grappling with some major shifts in the long held, deeply held ideas about learning*". Carina was not the only participant to note that they brought ethical issues into classroom conversations: "*we talk about the ethical issues, and we look at AI and big data and algorithms*". Vega presented the concept of "*ethical relationality … coming from the work that that I've done with different First Nation or international indigenous music*", outlining that communication and access required an understanding of the ethics of sharing and relationships. For many of the participants, the ethical

issues surrounding digital and media communications are contingent on developing "*open teaching practices that centre ethical, relational, linguistic and cultural perspectives*" (Perseus).

One prominent ethical issue was that of copyright and the legal use of media and digital resources, not only for themselves as teacher educators, but for their students' explicit awareness and intentions when ethically using materials in their teaching practice. Andromeda mentioned efforts to be "*careful about the legally binding barriers that I have to model and also show respect for*". Sabik's reflections echoed those in Lyra's experiences when they signified that

> *"... when I ask students to create a blog and start posting their ideas openly, I have to ethically also engage them in conversations about the difference between submitting an assignment to me that's private, the other students don't even see it, versus putting something on a website that the world can see, and how that influences the communication?* (Lyra)

Izar expressed that:

> *especially as a teacher, as a content creator, working in a way that makes good use of actually seeing media literacy is quite different ... to consider how selecting an openly licensed or copyrighted resource impacts our learners and what they can therefore do to demonstrate their learning and/or curate the materials for future use.*

Izar also mentioned issues around copyright and digital rights management that impacted the use and access of teaching materials, since digital rights management constrain by imposing restrictions through purchase, loan, lease, or borrowing requirements.

For Rigel copyright meant a shift in thinking about personal ownership:

> *I've always sort of resonated with the fact there, the premise that it was like, you can release your images under Creative Commons ... that's one of my motivations is releasing it all under Creative Commons so people can start thinking about these ideas that are complex in maybe simplified ways.*

This mirrored Orion's conversations about applying explicit approaches to the use of Creative Commons licensing on course materials and student coursework productions. From these lived experiences, the consideration of ethical issues and use of CC licensing brought nuanced decision-making into communicating ethical issues in an open and modelled teaching practice.

4.3.1.3 Data management: Safety, Security, Privacy, Permissions

Explicit communication about data management issues such as safety, security, privacy, and permissions are an instructional necessity, as evidenced in many comments made by participants. Polaris' response was representative of the media and digital skills and fluencies revealed in the participants' lived experience as a teacher educator when shifting student learning from closed and password protected learning management systems into open, web-based, educational spaces such as blogs visible to the public:

> *I've made it part of my mission to become very literate in those areas. So that while I can't provide legal advice, I do make blog posts very, you know, related to students protecting your privacy, protecting student privacy … I tend to avoid things that require students sign up … I'm always engaging in open practices while respecting the need for privacy of my students of my learners … I knew I really need to learn much more to make sure that I was protecting their privacy, helping them learn to protect their own privacy.*

Another consideration was found in the reflective artifact created by Rigel which showed an icon of a "*data dementor*" in a demon shaped image, with this character appearing to eat the word '*extractive*'. These words and images were located in close proximity to the words '*media tools have dangers', data, privacy, algorithm, proprietary, and lock*. From this artifact, I inferred that Rigel's experiences in OEPr showed an awareness of the darker side of data management and surveillance technology, thus modelling care and concern for their own and students' data management skills and competencies.

For Andromeda, the experience with communicating issues surrounding safety, security, privacy, and permissions were transitional in terms of awareness of these issues for their own OEPr but also in developing awareness of safety, security, privacy, and permissions with their students. This included explicitly teaching students about password protection of pages and posts on a blog site, thus ensuring students had agency and control of permissions to sensitive or confidential information published to the web.

> *I noticed that students' privacy and security were not included. So that kind of, I don't know, surprised me or almost hurt me a bit, I was like, Oh, I better make them more inclusive, or more included, or more obvious…. with that security piece, I did stop and think about different ways that I could do something at a lower level that was safer. But now I know how to better do that.*

Aquila suggested the use of student pseudonyms to cloak students' identities if that was a privacy enhancing choice offered to students. Izar suggested intentionality in course designs when making safety, security, privacy, and permission decisions:

> *… for our course sites, we do have things that are only available to the learners for good reason, like a Zoom link, you know. There are things you have to keep safe and that may not be appropriate for public consumption.*

Merak reflected on the risk-benefit equation and the tensions that emerged when considering safety, security, privacy, and permissions within the MDL of an OEPr:

> *I guess my desire to have students live, sharing in the open in my course and finding there was a bit of tension for me in terms of protecting them, or just making sure that they were feeling safe enough that they were thinking through these things without it just being stressful was another tension for me.*

From these experiences, I suggested that although institutional policy may guide their data management strategies, it was concern for student safety and security that ultimately shaped the

communications about safety, security, privacy, and permissions for many of the participants in this research.

4.3.2 Creativity

Creativity was mentioned by every one of the participants. Further to this, creativity was modelled by many in their digital artifact productions. Within their conceptions of MDL, there was evidence of participants' awareness of the importance of multimodal and intertextual applications within their teaching practice. MDL were enacted within their own and their students' productions and performances when constructing teaching materials or crafting assignments to showcase learning. For Dorado, creativity meant resisting the use of exemplars in course materials or assignments and providing less choice since *"if you choose something that's really flexible, you know, then there's more creativity inside of that narrow choice"*. Izar applied creativity when building resources, supported by the affordances offered in fair dealing, Creative Commons, and open resources. Izar wondered *"if you're thinking about open practices, you might be thinking about, you know, how can we enable creativity? How can we let people stand on their own and make choices around what they're learning and how it's represented?*" For most participants, when applying MDL to OEPr, creativity was an emergent quality, tempered by informed choice.

4.3.2.1 Multimodal

Creativity for many of the participants included accessing, using, and creating within multimodal digital and media productions that incorporate or apply text, icon, image, audio, video, and graphic formats. This meant "*understanding how to convey messages, through media in different ways, not just print literacy … we have to be much more well-rounded"* (Aquila). In Perseus' artifact, there was explicit mention of using open, collaborative environments for idea sharing of multimodal resources and the acquisition of multimodal composition skills. For Merak, the drive to engage with multimodal resources emerged from their work in graduate studies where:

> *my curiosity and seeing some of the value in, for example, wanting to present kind of multimodal papers and wanting to remix images, or add video, or like at the time Prezi was kind of new at my faculty. I became like the Prezi ambassador, just because I liked the idea of these kinds of zooming in and out and seeing a visual representation of research that you could kind of manipulate and play with as you went.*

Both Andromeda and Rigel mentioned multimedia as an entry or gateway into learning and synergistically using "*what we need to use in order to learn*". Dorado connected "*critical literacy work that's more print based and multimodal with the digital*", specifically when "*looking at an ad the way you would a picture book, like looking at the colors and the text and the font, you know, but the video version, or the digital version*". Creativity was elemental in the facets of multimodal productions, as exemplified in the digital artifacts the participants shared.

Aquila saw creative works, particularly remix, as a core element in their MDL:

> *I don't have students create essays, I figured by the time they're in my course, they know how to do essays. So, we always explore media. For example, students reflect and create multimodal summaries of learning in five minutes for the end of each class.*

For Leonis, creative multimodal production with image and video were ubiquitous within their practice:

> *But the whole multimodal, being able to share video images online. I mean, really, everybody's doing that now, right? I mean, isn't that really the ultimate? When you think about Tik Tok and what's going on there or even Instagram when they brought in the video. ... I'm doing a project right now ... with a teacher about photography. And it's actually in a social studies part of the curriculum. We're looking at how culture and identity are embedded in photographs. So, I'm really interested in the visual part of digital. But my training is more in multimodality. So I'm always skirting between the critical and something else.*

Alternatively, Perseus brought a critical lens to the creative use of multimodal learning in teaching environments, focused on the challenges of video enabled teaching spaces resulting from COVID pandemic teaching:

> *The modality that we've been kind of moving around and back and forth from this online sort of thing isn't a good fit for everyone. And I mean, I can certainly attest to that in my own home. I know that there are a lot of students for whom an overwhelming sensory environment is an issue.*

Applying a critical lens to multimodal creative production was one facet of MDL within an OEPr.

4.3.2.2 Production

Creative production, as part of MDL in an OEPr, was not just for the purpose of sharing beyond a course. Perseus questioned "*When students create content that they share openly online (e.g., websites, digital artifacts, SM posts, accounts, channels) are their interests as learners served?*" The challenge in creative productions was ensuring authenticity in the process and products – the content, the conversations, the assignments, and the learning activities – and ensuring these meaningfully related to a course of study. For Polaris, and echoed by Aquila and Leonis, multimodal productions "*became a real opportunity into building my ability to create using digital tools, which then became the driving force for further deepening my media and digital literacies, which became more apparent and necessary as sharing became possible."*

When considering the integration of media productions into a course design or within assignment submissions, there needs to be explicit instruction of components relevant to MDL since you "*can't just make an assignment that requires students to use technology and say I'm doing MDL because you're not. You're integrating technology and maybe fairly effectively, but you're not supporting future teachers in building their digital media literacy*" (Polaris). When crafting multimodal artifacts for assignments, Aquila suggested that production included the

process and use of "*remix, … getting them to understand that you don't need to create things from scratch, that remixes are new creations in and of themselves. And that it's a way of actually honoring the intellectual property of others."* It was through the active process of creating a product, using a variety of media, in concert with explicit instruction and critical questioning, that MDL not only served the needs of participants in this study, but also the students they served.

4.3.2.3 Performance

Performance was both noun and verb in the MDL of the participants' lived experiences with OEPr. For many participants, teaching was an act of performance. When supported with digital technologies, these performances could be done beyond traditional boundaries of time, place, space, and audience. In face-to-face teaching environments, performance factors constrain and contain the acts and actions of the performers, teachers, and educators. Performance for media and digitally literate teacher educators meant fluidly shifting the practice from a physical stage – from places like classrooms, lecture halls, or seminar rooms – to digital spaces where media and design elements set the stage, and the media infused digital creations shared the event.

In the lived experiences of the participants, when creating performances of their teaching in open, web-enabled and digital spaces, their perfected multimedia productions were shaped by facets of MDL. In shining a light through these facets, some of the edges of MDL ideologies and values are reflected. From Lyra's experiences:

> *researching, teaching and academic publishing in the open has also reflected my commitment to the horizon and disrupting the status quo, interrogating practices that are past their best by date, and ensuring that the underrepresented in the academy … were more visible and their voices heard.*

The aspiration to center the voices of marginalized and under-represented populations in openly shared multimedia productions, was a foundational tenet of OEPr as noted in the experiences of Andromeda, Aquila, Leonis, Merak, Orion, Perseus, and Sabik. For Sabik, this highlighted the:

> *social justice side of open education in terms of giving voice to scholars and to educators, to students, who traditionally don't get to have their voices represented. I think with truth and reconciliation in Canada, with our move towards decolonization, I think open education can play a very important role with this.*

Izar mentioned creating a "*community of voices*" to craft learning activities and events in open spaces in order to "*make good use of what you find to develop content and ideas and bring the outside world in as much as possible*". For Leonis it was seen as a performative opportunity for "*this expression online, with a real authentic audience that, you know, we didn't have before*".

In Merak's lived experiences the challenge in course design, as the ultimate performative product, was to "*sort of break out of the constraints of crisis, to be able to design in ways that are truly humanizing and enable connections*". For Lyra, these connections related to their co-creation with students as part of the performance of teaching and within student-centered learning design. This was evident in their practice of "*co-creating assessment rubrics, we're co-creating the criteria, the levels of performance, the ways that we describe high quality work*". Rigel also included performative tasks in their media productions in course designs with OEPr, since spending

> *a lot of my career on like, let's get rid of the exam. What are you trying to test with your test? ... But when it's for performance, it's like that's an ultimate goal. But so many people's epistemology is based in this idea of what knowledge is, that it's just this banking model. But I don't want to call it banking model anymore.*

When considering the performance at the end of a production process, Vega critically examined the "*investment in time*", their own and that of their students, before making decisions that

impacted the production side of their OEPr. Merak's thoughts hint at the importance of this performativity as a way to take OEPr to a higher level as a teacher educator in order that "*our teacher candidates will be able to see that this is a worthy profession, because here are the voices that are speaking so authentically about what they're doing in the field".* Thus I noticed that creative performance was part of the ethos of OEPr and exemplified in the MDL experiences of the participants in this research.

4.3.3 Criticality

In the process of examining and creating multimodal productions there was a process of deconstruction when "constructing meaning from graphic artifacts – there is a process of noticing" (research journal entry). This process involved criticality in media and digital production, as Leonis suggested, *"media literacy is more of critiquing things. I mean, it is supposed to be productive. But I don't think it's been all that productive. The digital allows you to take it into that productive space with a critical perspective."* For Aquila, this was an active process "*in my foundations course, we talk a lot about tackling utopianism, technical determinism, techno-progressivism, you know, thinking about the different ways that we can think about technology, but again, always having a deep base of media literacy."* From Merak's experiences criticality was an essential and core tenet to their MDL "*because any instance in which we see technology as neutral as not having been socially constructed and not constructing us, I believe to be problematic"*. Dorado wondered, "*I guess where the critical part comes, is partly about the tool, but really more about the content, right? And the kinds of ideas that are in there*." For participants, this criticality stemmed from both receiving and emitting, or producing and consuming, digital materials and artifacts. Criticality was applied to digital identity work, for themselves and their students. Participants shared their intentional and informed decisions about where to circulate and distribute media and digital productions.

4.3.3.1 Emirec: Emitter and Receptor

In reflecting on this facet, a bit of background from MDL research was necessary. The notion of individuals being consumers and producers of media, or a prosumer as Toffler suggested, involves a fluid application of communicative roles from economic and capitalistic perspectives (Aparici & Garcia-Martin, 2018). This is represented by the term *emirec,* whereby individuals are viewed as both emitter and receptor of media productions (Aparici & García-Marín, 2018; Hoechsmann, 2019). For participants in this research, this meant making explicit, informed decisions within their knowledge networks and open educational spaces about where, when, how and with whom they wished to create, share, and communicate.

When considering MDL in an OEPr experience, there was intentional decision-making by participants relating to open publication of scholarly works and interactions with students. These decisions included limiting submissions or providing reviewer support to open access journals (Lyra, Perseus), to share on specific social media platforms (Leonis, Vega), to engage with students in open discourse spaces e.g. Discord or Twitter rather than within a closed learning management system (Andromeda, Aquila, Orion), or strategically using a course hashtag to send out notices and communications (Andromeda, Izar, Orion). In Dorado's digital artifact there was an explicit mention of the critical role of media literacy - "*proficient users can become more critical and can become media makers. I think media literacies has to include action beyond consumption/viewing*" which highlighted the shifting role from consumer to producer of digital productions. For Leonis there was awareness of "*the skills, dispositions and practices, which enable you to critically read AND create multimodal digital texts*. Aquila emphasized that MDL includes

> *a huge information literacy fake news piece here because we have to decipher media, we have to make meaning from, you know, the media that we consume, but at the same time,*

we're not just consumers. We have to be able to critically consume and critically create new media.

4.3.3.2 Identity

Digital identity was one of the elements of MDL that was mentioned by many of the participants. Their lived experiences included not only developing their own identities as teacher educators in open, web-based spaces, but the development of their students' digital identities as new teaching professionals. This involved experience making proactive, explicit and intentional decisions about linguistic identity (Vega), sedimented identities (Leonis) and scholarly identity (Lyra, Perseus, Vega). Perseus was explicit when sharing identity in their media productions, specifically their curriculum vitae: "*I actually have the little open access symbol on my CV, and I put it beside every single publication on my CV; any of them that are open access, I ensure that that symbol is there."*

Identity work also meant finding your place within the faculty in which you work. For Perseus this meant "*trying to offer something new, trying to kind of leverage my experiences in my networks to kind of build capacity*". For others, their lived experiences involved facing fears and accepting the risks of openly sharing professional identities, as exemplified in Andromeda's comment: "*it's not just about I'm scared to share. It's I'm scared to share because of professional repercussions, which is very different.*" This resonated in the experiences of participants with bilingual practices, and those working within Indigenous and international contexts. For Andromeda this included a process of reflective practice, looking back at iterations and variations in identity work, stating "*it took me this whole reflective activity to remember where this all started, and how my identity formed, it was like I'd forgotten it, but it was there all along*".

Participants shared MDL related experiences with identity work when teaching their teacher candidates to reveal their professional identities in open web-based spaces. Consideration

for "*this practice of helping teachers to sort of grow into their digital public persona through, you know, open writing*" was mentioned by Andromeda, Aquila, Orion, Perseus, Polaris, and Rigel. An understanding that digital identity is fluid and iterative was mentioned by Leonis: "*they're like Cummins' identity texts, except it is their digital identity texts - this is who I am, this is what I care about … but you can shift that, of course, into whatever space you want*" (Cummins & Early, 2010). Identity work also involved conversations and negotiations with teacher candidates, as exemplified in Andromeda's comment "*many of my students are international, and they're really frightened of their identities and what they could say online. So, they share that back with me and we negotiate what things will look like*". Likewise, identity work with students involved explicit instruction, as indicated by Rigel who referenced the visitors/residents visualization mapping research by White and Cornu (2017):

> *I often do the visitors versus resident's grid with my students, just so that they can acknowledge where all of their identities are making footprints and who owns that as a way of talking about the challenges of technology, which I think like that's this big elephant in the room that we don't often get to really talk about.*

These tensions and challenges were echoed in other participants' experiences when working to develop teacher candidates' digital identities as exemplified by Perseus' comment:

> *there's a lot of emergence happening … with young adults growing into their professional identities. But there are, I think, really profound intersections that I think we've got a lot more to learn there, you know. We're asking for openness, but I think we also recognize that openness for this generation of young professionals comes with some baggage.*

For the participants in this study, digital identity was one of the critical components of MDL in their OEPr, as they circulated and distributed media and messages within their open, web-based communication ecosystems.

4.3.3.3 Circulation

When circulating and distributing openly shared materials, participants critically considered both visibility and sustainability. This was applied to their own materials and identities, but also the circulation of student work-product from course content and assignments. Circulating materials that were identifiable and attached to professional identity involved risk and vulnerabilities, as well as benefits. For Merak, the risks were evident in their lived experience: *"I've never been too nervous to share a polished piece. But our teaching resources in real time are not always that polished. And so, it was grappling with, you know, as I say, how to do so openly".*

Sustainability of circulation within web publications was a concern from Polaris' lived experiences with an ongoing media and digital project: "*I'm hopeful that the project will live beyond me, and that maybe that's part of the open practices thing is ushering others into practices so that they can be sustainable and enduring, too".* Sustainability issues emerged from Perseus' experiences, but this led to a rethink and recalibration of digital networks and collaborations since it was:

> *really sort of in those conversations grounded, situated, you know, like bricolage if you will, that we start to kind of uncover the nuances of the questions that come up in our practice, and then when we're with others, we can get through. So, I continue to believe in that model. … I started to develop networks with people who are working in digital literacies across Canada, finding different solutions.*

For circulation of student coursework, Leonis identified one challenge since "*a lot of my students are very hesitant to share openly, even within our, the classroom space, their assignments, their productions. It makes them feel vulnerable"*. Lyra's experiences, as echoed in those of Andromeda, Carina, and Polaris, mentioned encouraging students to publicly sharing their work:

> *either through mechanisms I provide in the course, or mechanisms I teach students about and encourage them to use. You know, so for example, if we're playing around with Scratch, and you know, the purpose is to give student teachers firsthand experiences with programming that they can then take into their practice. I encourage them to grab examples of existing code, published their codes, compare codes, share codes, you know, share their work at different kinds of events.*

Leonis asked students to *"critically review global education programs and share their reviews online as digital flyers, for an audience of educators … Students share with classmates and are also encouraged to share on social media"*. When circulating student work to wider audiences, one challenge was the sustainability of this practice, as Leonis indicated:

> *I would say that most of their things could be found, but they're not in public spaces. But it is something to think about, I think whether they should be more visible. It's always hard to organize those things, you know, to think about what is the best way, and where to put it? Where should it live?*

Aquila provided one suggestion for involving students in making critical decisions about circulating their media productions online:

> *I just share examples of what's happened to me, what's happened to others. And you know, the reality of sharing online and some of the repercussions that can occur. And then from that point, they have informed enough consent, I think, to take this on, or not take it on, and most still do. But I think because they're already doing this elsewhere, as well. They like to hear the cautions, but at the same time, they're going to continue doing what they're doing.*

In summary, the generated themes from the focus on facets of MDL in the lived experiences of the participants resulted in a closer reflection on communication, creativity, and criticality. Communication included an exploration of audience, ethical practice, and data

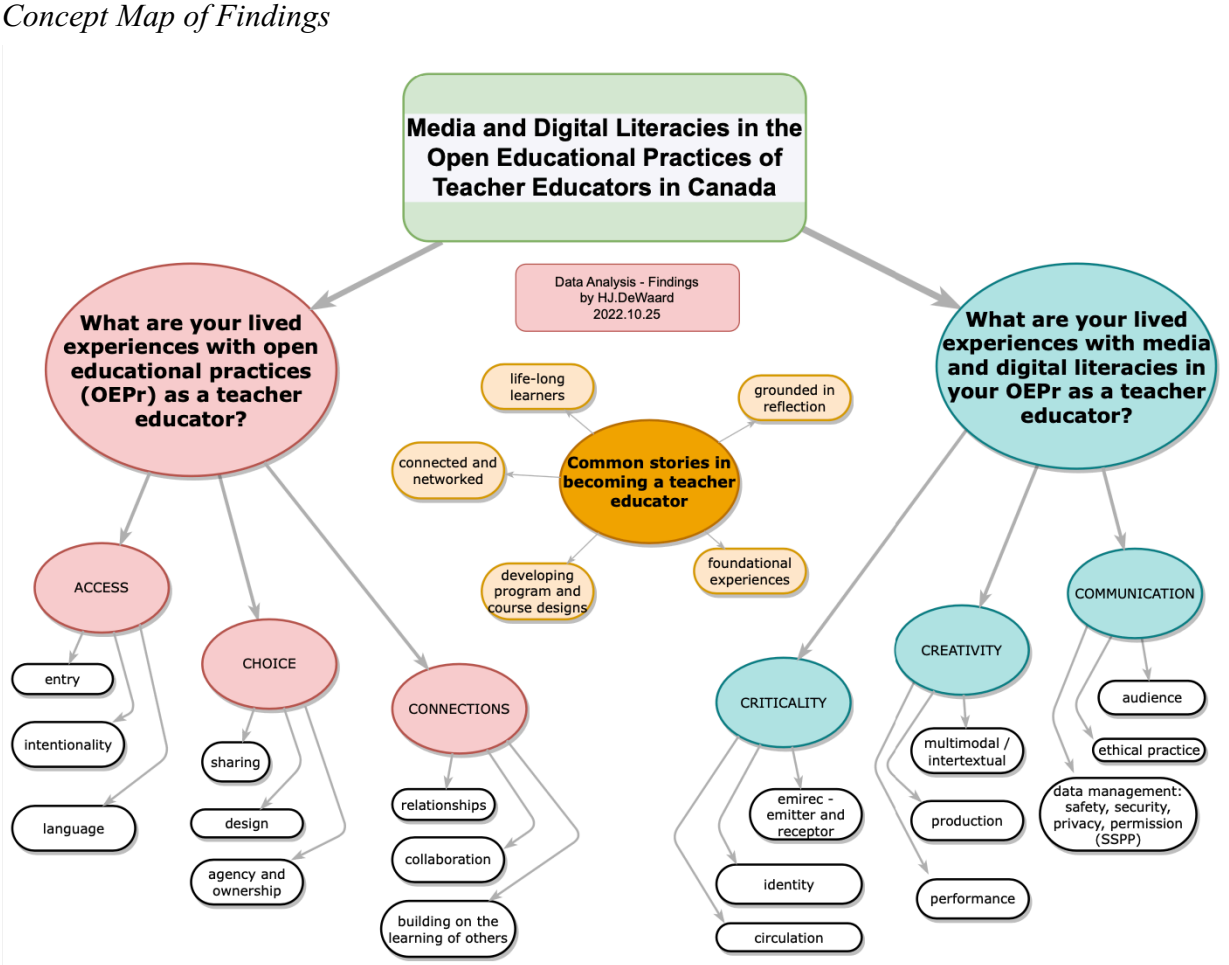
management with a focus on safety, security, privacy and permissions. Creativity was evident in experiences with multimodal media productions and performances as a teacher educator. Criticality was a factor in the emirec nature of media engagements, in identity work for themselves and their students, and in nuanced decisions when circulating media productions.

4.4 Crystallizing the findings

By applying the P-IP methodology, I paused to analyze the findings using a whole, part, whole process. I returned to the crystallization methodology in order to bring clarity to the views that framed my seeing (Lather, 2006). I remixed the findings into a concept map (see Figure 20) in

Figure 20

Concept Map of Findings



Note. Compiled and remixed from research findings. Published CC BY-SA-NC license (DeWaard, 2023).

order to make sense of the data gatherings. I understood that the graphic tacitly included individual cognitive components — what participants know and think — and their actions within social contexts — what they say and do (Gee, 2015) within their OEPr. I recalled the Cynefin framework (see glossary item) as I emerged from the chaotic and confusing mix of lived experiences and stories of MDL that the participants shared throughout the data gathering moments – the interviews, artifacts, notes, memos, and web-creations.

What emerged and crystallized was a metaphor to describe and focus on the facets found in the complex inter-relational conception of MDL within an OEPr. I considered the image of a navigational gyroscope to assist my understanding. For you, the reader, try if you will to envision MDL within OEPr represented by a navigational gyroscope, spinning on a series of rotating wheels set on an axis. Perhaps a graphics interchange format visualization will assist this seeing (see Figure 21).

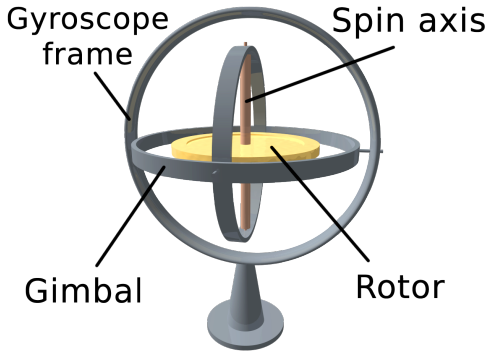
Now imagine teacher educators are located on the central platform which is a rotating wheel in the middle of the gyroscope. I positioned this as the inner layer of teacher education where media and digital literacies influenced TEds' actions and learning design decisions. I framed this from the foundational components of critical digital literacy as identified by Hinrichsen and Coombs (2013) building on the critical literacies identified by Luke (2012). These components included code breaking, meaning making, using and creating, analyzing, and developing digital persona. These aspects of digital literacy were also evident in several of the MDL frameworks examined (see Table 4 in Appendix I). This wheel, representing the faculties of education in Canada, was positioned as the central platform. This platform spins around an axle which is attached to an inner wheel called a gimbal. This gimbal floats freely inside a larger outer wheel, a second gimbal, both nested within a stabilizing frame which is attached to a base.

I envisioned the inner ring, or gimbal of the gyroscope, as holding the components of MDL that were generated from the data as outlined in the findings. The moving sliders on this

inner gimbal include the MDL factors of text, audience and production which shaped the focus of participants' lived experiences on the components of communication, creativity, and criticality. These components included underlying elements of ethical practice: an emeric stance as both emitter and receptor of multimodal productions and performances; data management with consideration of safety, security, privacy, and permissions; development of persona and identity; and, circulation. The sliders on this ring point are indicative of the shifts of focus participants applied when making decisions about factors shaping text, audience and production. These elements were evident in many MDL frameworks and were represented in the remix of the Association for Media Literacy media triangle (Association for Media Literacy, 2022) (see Figure 11).

Figure 21

Gyroscope



Note. Accessed from Wikimedia Commons. Vieira, L. (2006). (https://commons.wikimedia.org/wiki/File:3D_Gyroscope.png). Licensed under public domain.

The outer gimbal of the gyroscope image is where I positioned components of OEPr as generated from the data and outlined in the findings. The sliders on this wheel were factors that focus on access, choice and connections as generated from the findings. On the wheel itself were the elements found within the participants' lived experiences with OEPr including entry, intentionality, language, relationship, collaboration, knowledge building, agency and ownership, design, and sharing. Since the sliders can rotate around this outer ring, it suggested fluid yet intentional decisional forces that influence and focus the underlying components.

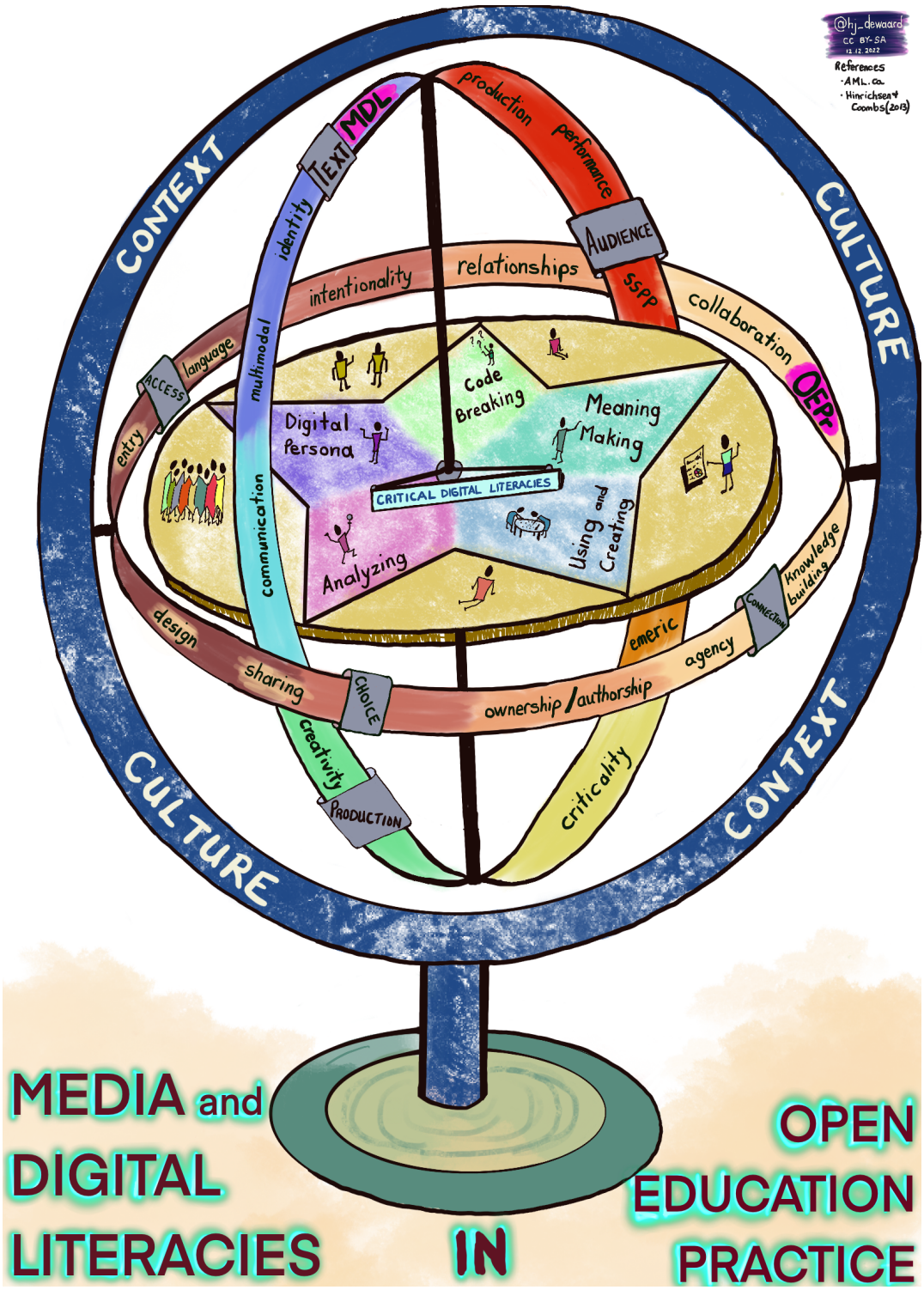
The final, exterior and outermost ring appeared to be a stabilizing ring because it is attached to a standing base. I positioned this wheel as representative of the contextual and cultural environments within which participants' lived experience are enacted. These included

the local, provincial, national, and international ecospheres within which the TEds in FoEs enact their MDL within an OEPr. It was within this exterior ring where the inner rings were in motion. Although the interior rings were fixed together at pivot points in a semi-structured way, there was fluid motion of these interior rings. The outermost ring was perceived to provide a stabilizing influence and anchored the actions of the other rings. Despite the fact that the cultural and contextual factors represented by this exterior element appear anchored, it should be recognized that culture and contexts are also potentially in motion, albeit somewhat less obviously or less rapidly as the interior elements.

Evident from this moving and spinning image was the realization that infusing MDL into a teaching practice can be challenging, particularly when the subject matter being taught may already be complex in itself. Infusing MDL elements within an open educational practice brought additional challenges to the art and science of teaching. This was further complicated for teacher educators as they attempted to develop a sense of what it meant to be a teacher within the novice teaching practice of their students, the TCs in the FoE.

Figure 22

Navigational Gyroscope of MDL in OEPr



Note: compiled and remixed from research and information by Association for Media Literacy, Ontario; Hinrichsen & Coombs, 2013; findings in dissertation of H. J. DeWaard. Published under CC BY-SA license (DeWaard, 2022).

What was not evident within this image of the moving layers of the gyroscope was the movement along the wheel rim itself where elements of MDL and OEPr were positioned, which I have represented by the sliders on each inner wheel. What may also be missed was the potential interplay between the wheels, as indications of the iterative and fluid navigation TEds experienced when applying MDL into their OEPr. In viewing these multiple layers and potential moves between layers, I recognized the intentional decision-making about MDL that the participants made when including or excluding elements within the full scope of their OEPr. This intentionality was reflective of the multiple complexities participants face in the MDL they apply as they navigate the nuanced layers of their OEPr.

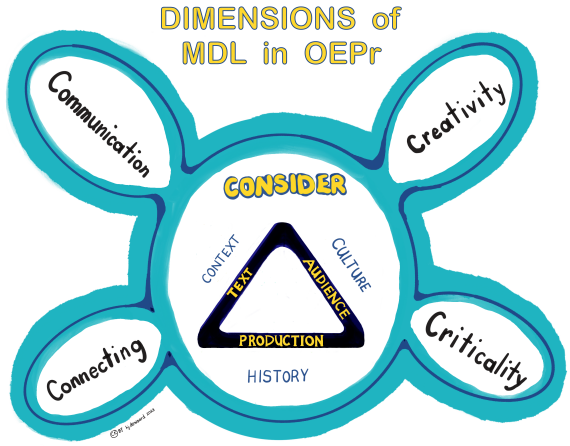
Although the graphic image may suggest the layered and fluid motion among the elements found in the lived experiences of the participants, it was through the analysis of the findings in contrast to frameworks of MDL that deeper understanding emerged. By reflecting on previous assemblages of MDL frameworks (Belshaw, 2011; DQ Institute, 2021; Hoechsmann & Poyntz, 2012; Inamorato dos Santos et al., 2016; Martínez-Bravo et al., 2022; MediaSmarts, n.d.; Redecker, 2017). I looked for commonalities and connections to the facets generated in the findings (see Table 4). By aligning the elements found in a variety of research frameworks, I focused on dimensions that consistently appeared between and among the conceptions of MDL evident in these frameworks. These include communication, connecting, creativity, and criticality (see Figure 23). These framed the dimensions in the discussion of my findings. The chart and graphics supported the framing of my seeing (Lather, 2006).

This chapter focused on the lived experiences with MDL of the TEds within their OEPr. When describing their experiences, participants explored themes of access, choice, and connections. Access touched on issues of entry, intentionality, and language. Choice revealed decisions when the participants shared, designed, and enhanced agency within media and digital teaching and learning activities. Connections revealed concerns with trust and power dynamics

within OEPr in teacher education. Within their MDL, participants described communication considerations, creativity, and criticality within their teaching practices and the learning designs shared with students. Communication elements in the MDL of participants touched on audience, ethics, and data management specifically safety, security, privacy, and permissions with student data in an OEPr. Creativity was revealed through multimodal and intertextual, media infused productions that shared learning content and assessments created with media and digital tools. Productions and performance for the participants became focused on voice and co-creation. Criticality was revealed through both creating and sharing, identity work, and in circulation and distribution practices. In the next chapter these OEPr and MDL elements will be discussed in my quest for understanding of the lived experiences with MDL in the OEPr of TEds in Canadian FoE.

Figure 23

Summary of Dimensions of MDL in OEPr



Note. Compiled and remixed from research findings. Published under CC BY license (DeWaard, 2023).

Chapter 5: Discussion

In this chapter I review the findings to explore the complexities of MDL within OEPr reflected in the participants' lived experiences as TEds. I make sense of these lived experiences within the broader field of media and digital literacy, and teacher education. In this section of the dissertation I move through liminal space, sifting through what is known and unknown, while this discussion *becomes* clearer as I write. In this way, I generate "knowledge that is partial and prismatic. Knowledge that admits its failures and opens up new ways of thinking" (Cannon, 2018, p. 572).

In order to stay true to the P-IP approach and the crystallization methodologies that are foundational to this research, I offer this discussion as a kaleidoscope of ideas – both noesis (mode of experiencing) and noema (what is experienced) (Rosenberger & Verbeek, 2015). I remix from MDL frameworks that include the individual cognitive components (what participants know and think) and their actions within their social contexts (what they say and do) (Gee, 2015) from an OEPr perspective. I explore where data gatherings from the lived experiences, interviews, observations, and media productions stand proxy for the MDL within the participants' offerings (Rocha, 2015). Through these crystallizing moments and with the findings in mind, I reflexively open myself to possibilities as I turn to wonder (Rocha, 2015; Vagle, 2018).

I appreciate that the intertwined concepts of media literacy and digital literacy are recognized in literature as complex concepts (Martinez-Bravo et al., 2022; Nichols & Stornaiuolo, 2019; Stordy, 2015). The extent to which global efforts attempt to bring media literacy and digital literacy into focus is evident in documents such as the *Common Framework for Digital Literacy, Skills and Readiness* (DQ Institute, n.d.) and the *Media and information literacy Country analysis* (UNESCO, 2013). Although media literacy and digital literacy are

more frequently seen as separate and distinct concepts, it is through a process of combination that I attempt to clarify my thinking (see Figure 22). I attempt to elucidate but not minimize the complexity of teaching and learning with MDL within an OEPr as a TEd, which may be as challenging and complex to understand as the inner workings and systems of practice responsible for sending the Hubble telescope into space. Thus, I focus on individual dimensions of MDL and OEPr as generated by the participants and identified in the findings.

I revisit the research question in order to frame the findings: What lived experiences of media and digital literacies are evident in the open educational practices of teacher educators in faculties of education in Canada? I re-examine the concept map created from the findings, seeking to consolidate my understanding (see Figure 20). I analyze the navigational gyroscope graphic created from the findings (see Figure 22) and closely examine the layers and facets of the complex lived experiences of the participants with MDL within an OEPr in their roles as TEds in FoE in Canada. I consider how the arbitrary delimiting boundary of selecting participants from within the geographic boundaries of the country of Canada offers little in terms of commonalities of experiences since it was applied to conveniently contain the scope of the research. Because of the dissimilarities in governance and funding structures of education in Canada, there may little in the lived experiences of the participants that can be drawn from the research that speaks to the Canadian-ness of the experiences. Perhaps future research could focus on making this type of comparison, seeking out similarities and differences within lived experiences of TEds in FoE in other global contexts.

I attempt to break out of the siloed thinking that exists in the fields of teacher education, media studies, digital literacies, communication and information literacies, and critical literacies (Leaning, 2019) to allow synergies to emerge. I create and revise a table where I compare and contrast assemblages of MDL frameworks (see Table 4 in Appendix I). The map, the graphic and the table are analytic forms of '*dispositio*', arrangements resulting from my "careful

consideration of how component pieces should come together in a composition, both narratively and logically" (Hoechsmann in MacKenzie et al., 2022, p. 295). These analytic arrangements are representative assemblages of the participants' MDL in their OEPr.

I share these crystallizations of media, specifically sketchnotes and concept maps, in order to make sense of the lived experiences of the participants in this research. My P-IP approach recognizes the impermanence and imperfection in these offerings. I acknowledge that this writing and the graphic renderings are dependent on language and that semiotics may shift meanings. The words I chose to use to represent the 'thing' called MDL in the participants' OEPr may fail me. MDL and OEPr understandings depend on language where I as author, and you the reader, rely on code breaking and meaning-making to understand the nuanced and tacit scripts presented in these multimodal formats.

From these diverse formats (see Figure 16, Figure 17; see Table 4) my focus turns toward identifying terms from within the findings that are more likely to be referenced within frameworks describing MDL. Despite my intentional focus on FoE in Canada, I critically selected both media and digital literacies frameworks that are representative of Canadian and global perspectives, providing a range of dimensions and factors relevant to this research. Two of the selected frameworks are compilations and distillations of numerous international frameworks (Martinez-Bravo, 2022; DQ website, n.d.) with the DQ framework identified as being comprehensive (Park et al., 2020). From a comparison of these frameworks, specific facets of MDL emerge as being more likely to be associated with teaching practices, particularly within an OEPr. Although these are not the only possible terms to explore, the ones I have selected as the dimensions on which to focus this discussion include the terms communication, creativity, connection, and criticality. As I examine these elements in this discussion, I reconnect to the research literature and reflect on the participants' lived experiences as enacted within the

autonomous and ideological conceptions of literacies, acknowledging MDL as cognitive and socially-contextual practices (Stordy, 2015; Street, 2003).

5.1 Dimension One: Communicating

"The digital isn't magic. It isn't mysterious. It's regular human communication astride a new medium. Let me say that again: It's regular human communication astride a new medium. There's no need to make it more than it is." (Morris, 2017, paragraph 25)

From a media and digital literacy perspective, communication is both purpose and product. As well as appearing in the findings of this research, the concept of communication is evident in each of the eight MDL frameworks selected for examination in this discussion (see Table 4). What becomes clear, through the stories of the participants and the artifacts they created, is that the ubiquity of digital applications may not appear to be magical to the participants, their use of digital communications have rendered the magical into the realm of being ordinary.

The quote by Morris (2017) echoes back to Marshall McLuhan's (1964) phrase that the 'medium is the message'. This ubiquitous nature of technologies to create communications reflects the lived experiences and stories from the participants, exemplified in the words of one participant who suggests that media frames the message and that the digital is the mechanism through which messages are created and shared. The medium – the digital format – shapes the messages that are communicated and exerts influence over how the message is constructed and shared. This reflects the importance of communication as an essential element of human interactions and relationships. The use of digital technologies may be a newer medium and mechanism for communicational endeavours, yet the participants in this research are able to draw on skills, fluencies, competencies, and literacies already in place within their teaching practices to build and maintain relationships with others in their world through the digital communicational tools they choose to use, within the limitations of the digital devices available to them. In their lived experiences the participants select and apply digital technologies to

communicate and build relationships, primarily with their students as audience, but also within multiple contexts, *through* the technologies they use. The technology becomes ubiquitous to their communicational practice as a TEd. This is particularly important given the dramatic shifts in how teaching and learning is conducted in light of the COVID-19 pandemic. For the participants in this research, the digital is not magic, it is the way they do their work of teaching and learning. The media and digital tools and devices participants use to communicate with specific audiences – their students, colleagues, networks, or openly with the world – did not necessary shift as a result of the pandemic, but gain prominence in their lived experiences as a result of shifts to online teaching and learning precipitated by the pandemic.

5.1.1 From the frameworks

Communication is identified in the frameworks I examine for this discussion (see Table 4).

- Hoechsmann and Poyntz (2012) see communication as one of the seven essential 'Cs' of contemporary practices (p. 149), including media production (p. 110) and networked thinking, particularly in light of instant messaging options, as part of communication competencies (p. 160.
- MediaSmarts Canada identifies the key concept that media are constructions so communication includes reading media and understanding media representation as forms of expression and negotiated meaning within digital media experiences (McAleese & Brisson-Boivin, 2022).
- UNESCO (2013) defines communication as a process whereby an informational message is packaged, channeled and shared between a sender and a receiver through a medium. Further an media and information literate individual displays competence in "communicating information, media content and knowledge in an ethical, legal, and effective manner, using appropriate channels and tools" (UNESCO, 2013, p. 135).

- Belshaw (2011) suggests the communicative element is pivotal in the eight digital literacies identified in his research, with a focus on not only production but on the deconstruction of media messages by using the difference between "LOLcats" (p. 210) and essay writing as an example.
- Martinez-Bravo et al., (2022) categorize communication under the social dimension in their analysis of digital literacies found in 21st century competency frameworks. These authors posit that a "sense of belonging to a global community, the multicultural vision, participation in networks and communication in the digital ecosystem constitute the starting point" (p. 6) to the "development of an awareness and values connected with social and civic responsibility in a globalized world" (p. 11).
- DigCompEDU places the focus of communication within the realm of facilitating learners' digital competence by incorporating "learning activities, assignments and assessments which require learners to effectively and responsibly use digital technologies for communication, collaboration and civic participation" (Redecker, 2017, p. 23).
- The DQ global standards place a focus on online digital communication and collaboration, as well as public and mass communication. Identified as the eighth of twelve future-ready skills, communication subskills include presentation skills, written communication, collaboration and teamwork, active listening, self-control, and storytelling (D.Q. website, n.d.).

Communication and education, and thus teacher education, are explicitly tied together. Teacher educators understand that their abilities to communicate clearly and effectively impacts how lessons are learned or how students engage with learning opportunities. I connect this observation to the research literature relating to media literacy and educommunication. I pay attention to the notion that "an educational act is viewed as a communicational act, and a communicational act is an educational act" (Barbas, 2020, p. 74) and that education is primarily

a communicational endeavour (Chiappe et al., 2020). Bringing an educommunicational perspective into focus in teacher education, such as that done through the communicative work of the TEds in this research, may hold promise within a future-focused, MDL focused, open education focused learning environment with teacher candidates. The concept of educommunication may provide a path forward in the pursuit of MDL in OEPr in teacher education.

As evident in the stories shared by the participants, and evident in the frameworks, communication creates the primary purpose for media and digital literacies for both construction, deconstruction, production and dissemination of information, not only for their pedagogical practice with students, but in all their open educational endeavours. Research by Young and Nichols (2017) suggests that "diversification of communication within teaching and learning practice gives students more choice and opportunity to interact with both their peers and teaching staff" (p. 345). As outlined in the DQ framework, this includes presentation skills, written communication, collaboration and teamwork, active listening, self-control, and storytelling. For example, Andromeda, Aquila, Izar, Lyra, Orion, Perseus, and Polaris engage learners in writing and presenting course tasks using blogging as a means of communication. Vega engages learners in active listening in the use of podcasts as a means for communication. Leonis and Rigel integrate video and image production into their communication strategies with students. Although the participants share stories about on media productions using digital technologies, I notice that their communication hinges on decisions within both digital and analog domains. Continual negotiations between/among distribution of communications through public, private and controlled digital spaces is required. This is echoed in Cronin's research into OEPr (2017) and Hoechsmann and Poyntz's (2012) considerations of media literacy practices. This leads me to examine two dimensions of communication – as a human right for a common good and human beings as storytellers.

5.1.2 Communication as a human right for a common good

Belshaw (2011) suggests communication as a nuts-and-bolts element of digital literacies, one of the eight essential digital literacies identified in his research, although also recognizing that digital literacies "are *transient*: they change over time, may involve using different tools or developing different habits of mind … They *can* be scaffolded and developed but to do so involves more than training, it involves *education*" (p. 204, emphasis in the original). Belshaw (2011) draws on research to bring to mind a linkage to media and digital literacies where communication is a basic human right within a growing and sustainable democracy. Many participants spoke of their belief of their role in education to extend learning as a common good.

As noted in the findings, communication skills and fluencies using web-based tools are foundational to the participants' open teaching practices. This is evident through their lived experiences in self-directed learning and self-driven explorations of digital communicational technologies to enhance their teaching, and their students' learning experiences, for example, Vega's push to learn how to create podcasts for their course during the pandemic as a means of communicating course content. The communication strategies applied by the participants include the use of technologies that take a turn toward oral traditions (Belshaw, 2011) as well as increasingly visual forms of text production to communicate in multiple formats. Participants mention their active use of video and audio communications to supplement and enhance text-based messages for coursework to ensure student understanding.

As also noted in the findings, the participants grapple with the ethical use, creation, and communication of media produced *with* digital technologies, but more worrisome for a few of the participants are those media productions *by* technologies which are occurring with the advent of increasingly capable artificial intelligence software (see glossary) options (Borenstein & Howard, 2021; Chen et al., 2020; Gibbs, 2022), particularly with the ChatGPT (see glossary) form of artificial intelligence writing software, bringing this to the forefront in current

educational contexts (Contact North, 2023). A shift in OEPr and MDL will potentially emerge as the application of block-chain technologies (see glossary) impact educational practices as mentioned by ER. These technological changes require additional skills, fluencies and competencies to further inform TEds' MDL as they push toward OEPr as a communicational mechanism as a human right for a common good.

5.1.3 Humans are storytellers

Teachers and teacher educators are storytellers at heart. Stories communicate. The participants in this research share their stories of MDL and OEPr with a focus on purpose and audience for the creation of the storied messages produced for teaching and learning. These sites of storying are evident in the findings. Here I make a connection to Thornburg's (2004) writings about primordial metaphors and campfires in cyberspace since there is

> a sacred quality to teaching as storytelling, and this activity took place in sacred places, typically around the fire or under a tree. The focal point of the flame, the sounds of the night, all provide backdrop to the storyteller who shares wisdom with students who, in their turn, become storytellers to the next generation. In this manner, culture replicates itself through the DNA of myth (paragraph 8).

Although traditional campfires are replaced by the glow from computer screens, the metaphor is no less compelling for todays communicational purposes. Thornburg talks about spaces like the campfire, the watering hole, and the cave as sites where communications occur. I suggest adding the stage as an additional site, whereby the internet and open publications become 'staged' productions of perfected communications worthy of larger audiences. Merak makes reference to this in their lived experience; not wanting to share productions in the open unless they were perfected. This brings communicational purpose to these sites of endeavour for the participants in this research.

The campfire becomes Zoom rooms with breakout rooms, where conversations focus on topics relating to course content or opened dialogues. The watering hole becomes the back-room chat spaces created for one-off conversations as students and TEds sustain their learning with fluid dialogues, such as Aquila's use of Discord. The cave becomes a blog, website or shared document space for reflection about teaching practice. The stage becomes the sites where multimedia productions share stories and ideas, and learning events are showcased in digital spaces such as Twitter, Instagram or Facebook. Each of these metaphoric spaces require that the participants in this research make intentional choices, paying strategic attention to the intended audience for the communications, and the specific choice of digital tools. Participants in this research, through their shared stories, model their MDL in action for communicational purposes.

Although it may be self-evident that communication is one of the key elements to MDL and OEPr, the participants in this research continually navigate ***to*** and ***through*** communicational sites, spaces, strategies, and identities. They make strategic decisions as they attempt to answer questions such as *Will I share?; Why will I share?; With whom should I share?; Where will I share?*; *Is this good enough to share?;* or *How might sharing impact my digital persona?*; as echoed in the comments by Merak and revealed in the research by (Cronin, 2017).

5.2 Dimension Two: Creativity

> *Creativity is just connecting things. When you ask creative people how they did something, they feel a little guilty because they didn't really do it, they just saw something. It seemed obvious to them after a while. That's because they were able to connect experiences they've had and synthesize new things.* Steve Jobs (n.d.)

Defining creativity within a media and digital literacy framework requires a shift in focus from previously established dual foci which include capital C creativity, describing uniqueness or originality in transformative performances and productions, and lowercase C creativity concerning the value, usefulness or quality of novel solutions to relevant problems (Henriksen &

Mishra, 2015; Schmidt, 2010). Creativity within MDL requires cognitive arrays of "intellectual, cultural, and aesthetic interests" (Hinriksen & Mishra, 2015, p. 7) involving media and digital contexts and topics that are grounded in social and environmental contexts

From the research findings, I notice that creativity within the MDL of the TEd participants emerges from a creatively flexible and technologically fluent mindset (Henriksen & Cain, 2020), supported within an abundant personal and professional "micro-culture" (Henriksen & Mishra, 2015, p. 36). This creatively flexible and technologically fluent mindset is grounded in disciplinary knowledge, technological knowledge, an experimental disposition with technologies, and a "willingness to push students to consider and re-consider what they know" (Henriksen & Cain, 2020, p. 177). This mindset and micro-culture is evident in the findings and includes a willingness to imitate and remake media (Hobbs & Friesem, 2019), as shared by Dorado, Leonis, Orion and Vega; remix messages with diverse digital technologies as Polaris did in the digital artifact; and, integrating design thinking into technological applications within their OEPr as shared by Andromeda, Orion and Perseus.

5.2.1 From the frameworks

Creativity is evident in most of the frameworks I explore for this discussion (see Table 4).

- Hoechsmann and Poyntz (2012) identify creativity as one of the seven Cs, where reworking materials and applications is a key competence and that "creative practices are a powerful means for students to explore their emotional investments in the media" (p. 117).
- Although creativity is not explicitly mentioned in the MediaSmarts Canada digital media competencies, it could be encompassed under media representation, and making and remixing (McAleese & Brisson-Boivin, 2022).
- UNESCO (2013) identifies a media and information literate person as one who is able to "create/produce new information, media content or knowledge for a specific purpose in an

innovative, ethical and creative manner" (p. 127) with ten specific performance criteria included within this element.

- Belshaw (2011) identifies creativity as the sixth of eight digital literacy elements with connection to 'learning how to learn' which involves risk-taking to redefine learning for both teachers and students.
- Martinez-Bravo et al., (2022) identify creativity as one of the elements within the cognitive dimension and relates this to cognitive processes as well as the production of creative artifacts which build knowledge through meaningful learning.
- DigCompEDU identifies creativity as one of the digital competencies and places it within the area of problem solving, content creation, and empowering learners where educators model and encourage the creative and critical use of digital technologies, fostering creative digital expressions. Creativity is also mentioned in the areas of learner engagement, self-regulated learning, and reflective practice (Redecker, 2017).
- Creativity is identified as one of the three levels that impact the eight areas of digital life in the DQ global standards and allows for problem solving within knowledge construction and content building with technologies (DQ website, n.d.).

From the research, the key elements relating to creativity within MDL frameworks include problem solving, content creation, innovative applications of technologies for artifact production, and engagement within a reflective practice.

Engaging students in digital media productions is suggested in the research as an effective strategy for developing MDL. As participants revealed in the design of their course work and evident in their OEPr, they actively engage in creative "praxis, error, analysis, and solutions, to which experience can be added … the keys to greater empowerment" (Sánchez-López et al., 2021, p. 112). For the participants and the TCs they teach, their "media-based

narrative creation represents an opportunity to establish nodes between concepts, relational understanding, and the meaningful reconstruction of discourse and its appropriation" (Sanchez-Lopez et al., 2021, p. 112).

This creative multimodal and intertextual production and performance is echoed in the field of media education. Hoechsmann and Poyntz (2017) argue that "students need to engage with issues of production, language, representation, and audiences to address how meaning operates in the electronic media" (p. 7). Likewise, the UNESCO (2013) global media and information literacy assessment framework identifies that the literate person is able to "create/produce new information, media content or knowledge for a specific purpose in an innovative, ethical and creative manner" (p. 127) and "become independent, critical and reflective thinkers as well as effective, creative knowledge workers" (p. 36). MDL are evident in the shared stories by the participants of this research when remix and problem solving become creative acts. For example, Dorado's lived experiences with students creating assignments on global and urban perspectives in education using Padlet technology, Merak's story about students creating critical analysis of technologies, and students with Andromeda, Izar, Orion, Palaris, and Perseus' lived experiences when creating digital portfolios.

5.2.2 Remix as a creative act

Belshaw (2011) contends that in digital environments, creativity is a necessary component of literacy, and proposes reproduction and remix as creative acts. This is echoed by Hoechsmann (2019) who suggests that the "spark of originality, creativity and 'authorship' lies in the yoking together of already existing elements, often with some further innovation or addition" (p. 95). Collier (2018) adds the notion of 'relocalization' to creative and productive practice where local contexts and ecologies become spaces for remix to occur. Belshaw (2011) posits that creativity in digital literacies is "about doing new things in new ways. It is about using technologies to perform tasks and achieve things that were previously either impossible or out-

of-reach of the average person" (p. 212). From the findings, one example that specifically points to this remix creativity in action is the story of Aquila's student who created a pair of moccasins for their coursework and posted the experience of this production to the course blog site (link withheld to protect anonymity). An additional example is Carina's work with TCs and students in local schools to remix within coding and computational thinking opportunities in a special project to design and program a robot to navigate on the moon.

In the dimensions of digital literacy outlined by Martinez-Bravo (2022) et al., the cognitive dimension includes the element of creativity under the "cognitive processes of analysis, comparison, inference, interpretation, evaluation, creativity, and production" (p. 6). This includes the production of creative artifacts using digital tools for the purpose of meaningful learning and knowledge building (Martinez-Bravo et al., 2022). From the findings, I notice how the participants' lived experiences with course design, particularly during the pandemic, showcases the creative engagement with students through collaborative and creative remixing of learning activities using a variety of digital tools and strategies (see Appendix G).

5.2.3 Problem solving as a creative act

From the DQ global standards, creativity is a central element found in many of the components as part of an individual or organizational digital quotient. Creativity involves "problem-solving through the creation of new knowledge, technologies, and content" (DQ website, n.d.). From the DQ chart, I notice that creativity includes content creation and computational literacy. As revealed in the findings, the lived experiences of Carina and Merak included the element of computational thinking, but this was not mentioned by other participants. As research by Brassard et al., (2021) suggests, this creative component of MDL is not highly prevalent in teacher education.

Although problem solving as a creative act may be a fuzzy concept to define, it is connected to the ability to adapt, improve, and innovate (Henriksen & Cain, 2020; Henriksen &

Mishra, 2015). Findings from research by Henriksen and Mishra (2015) suggests that teachers who actively cultivate a creative mindset in their teaching practices transfer these creative tendencies from outside open avocations and interests into their teaching practices. This is evident in the findings where participants bring interests from their OEPr into their course designs, such as connections with the UNESCO sustainability goals (CICAN, 2020), and opening their learning spaces to external experts and interested participants which shapes their own and their students' MDL.

5.3 Dimension Three: Connecting

> *Except I have always sought to dismantle the screen, or to see through it. Because critical pedagogy, or critical digital pedagogy, is a humanising pedagogy—seeking the human behind the screen* (Morris, 2020).

As Morris (2020) suggests, humanizing teaching and learning practices by engaging *through* the screen rather than *to* the screen is essential for educators in order to make human connections within digitally enabled teaching and learning spaces. From the findings, the participants actively model the use of MDL to bring humanizing qualities into their teaching within their OEPr. I reconsider the findings and the research to explore the participants' connections as both process and product – noesis (mode of experiencing) and noema (what is experienced) (Rosenberger & Verbeek, 2015) – through a lens of humanizing teaching and learning through their computer screens. Although connections can be both cognitive and social in nature, this discussion focuses primarily on the social connections that participants experience in their OEPr that require or apply MDL.

As revealed in the findings, the participants' lived experiences and artifacts share their stories of how they foster relationships, seek opportunities for connections, and build on the learning of others in humanizing ways. This is exemplified for example by Aquila's story of one student's experience of creating moccasins. It is also evident in Vega's description of

unconditional hospitality as being attuned and deeply listening to others, being reciprocal, sharing accessibly, understanding the barriers preventing connections, and by avoiding inflicting harm on others. Vega's comments of unconditional hospitality echo my own experiences and conceptions of intentionally equitable hospitality (Bali et al., 2019) for video enabled dialogues within open and shared conference conversations, as arranged and presented by the grassroots organization Virtually Connecting, where media-making processes and products focus on equity of connections.

5.3.1 From the frameworks

Connecting is referenced in most of the frameworks I explore for this discussion (see Table 4).

- Hoechsmann and Poyntz (2012) see connecting as essential "thinking or actions that produce meaningful connection with significance for those participating in the network" (p. 160) and connecting between "different problems and with drawing conclusions across seemingly different discourses and practices" (p. 147).
- Connecting is not explicitly mentioned in the MediaSmarts Canada framework (McAleese & Brisson-Boivin, 2022).
- UNESCO (2013) considers individual cognition where connections are made when retrieving and restating information and media content, as well as the physical computer hardware connectivity via the internet which enables people to take advantage of crowdsourcing with/for information.
- Belshaw (2011) identifies connecting as an element that supports the eight digital literacies and draws on the theory of connectivism (Siemens, 2018) to suggest that digital environments enable and enhance analog connections within a participatory practice.
- In their examination of international digital literacy frameworks, Martinez-Bravo et al., (2022) identify connecting as a dimension within the operational dimension with links to the

use of digital tools to real-world purposes, but also within the social dimension in how people form hybrid identities to connect and exchange "needs, motivations, solve problems or to create new products/ideas" (p. 6).

- DigCompEDU focuses on how educators connect the wealth of materials, resources, and content through a process of using, modifying, and sharing in order to benefit student learning. This framework suggests that educators can then apply these connections to student learning when "exploring a topic, experimenting with different options or solutions, understanding connections, coming up with creative solutions or creating an artefact and reflecting on it" (Redecker, 2017, p. 22).
- The DQ global standards do not have explicit links to conceptions of connectivity but connecting could be implicitly related to collaboration and teamwork, active listening, analytic thinking, and systems analysis within the twelve future-readiness skills this framework identifies as compiled from international literature and reports (DQ website, n.d.).

In efforts to connect to the person/people on the other side of the screen, the participants' experiences reveal levels and degrees of connectedness within their professional and teaching networks (Lucier, 2012), their participation in communities of practice particularly around OEPr (Wenger-Trayner & Wenger-Trayner, 2015), and building relationships within a personal/professional learning networks (Oddone, 2019; Tour, 2017). Participants' stories mention how they design courses and connections with a focus on equity, care, and social justice (Bali & Zamora, 2022) and an awareness of elements of design for resistance (Wallis & Rocha, 2022). Teacher agency is briefly examined as a factor in the participants' efforts toward connecting within their teaching and learning and their OEPr. Each of these will be explored in relation to connections within the findings.

Thestrup and Gislev (Mackenzie et al., 2022) suggest that acting globally and feeling connected requires a mindset found on the playground or in the makerspace (see glossary), and where the internet connects people and places. Such playful mindsets include "experimental, non-linear, immediate and multimodal digital literacy practices" linking MDL processes and products within "content, tools of learning, contexts, peers, levels of challenge, time and place" (Tour, 2017, p. 15). This playful ethos is evident in the participants' stories of MDL within their OEPr as they uncover connections from/to texts, self, and the world within nuanced and multiple layers of engagement, and maintain a focus on their students as the primary audience. Their MDL processes and productions connect participants to national and global networks within physical and digital spaces, for example Rigel's connections to #FemEdTech (see glossary) or Lyra's connections to the Canadian Association for Teacher Education and Open/Technology in Education, Society, and Scholarship Association (see glossary). Connecting through organizations and hashtags, as mentioned in the participants' lived experiences, supports and develops MDL through the process of seeking, making, and maintaining connections, but also through purposeful collaborations on productions and research. For example, Andromeda and Izar's connection to GO-GN (see glossary), and Leonis' connections to global contexts through research and video productions to support courses they teach. The participants' stories suggest a playful and open mindset in their relationship with technology in order to see 'through' rather than 'with' or 'in' technological hardware and software. Participants divulge how they become explorers of technologies to discover the functions of the tools *through* which they can connect with others and provide enriching learning opportunities. For some of the participants this includes self-reflective practices that occur through blogging and/or social media connections.

5.3.2 Connectedness in community

Lucier (2012) describes levels and degrees of connectedness that include lurker, novice, insider, colleague, collaborator, friend, and confidant. In the findings, there appears to be an acceptance

of these degrees of connectedness in participants' OEPr, particularly when the sharing of media productions impacts their degree of connectedness to their current physical context. For example, Merak's feelings of being a novice in creating and sharing coding activities for/with their TCs and AT's feelings of confidence when connecting with collaborators for the teaching of video production. For Izar these degrees of connectedness include the connections to media and technologies through which people-centered connections occur, particularly those which encourage networks of openness by "taking aspects of closed communities and making those visible in some way" (Izar). Andromeda, Aquila, Lyra and Vega mention how they encourage students to shift beyond lurking by reaching out to connect to researchers in their fields of study as a novice or insider. For Andromeda and Izar their participation in the GO-GN network establishes stronger degrees of connectedness with feelings of community being expressed in their lived experiences within the field of open education research. Carina, Lyra, Merak and Orion mention being connected as collaborators and confidants within professional networks such as the Canadian Association for Teacher Education. Participants reveal how MDL productions influence and support their teaching and scholarly work through an active and reciprocal personal/professional learning networks (Tour, 2017) in a "linking, stretching, or amplifying" manner (Oddone, 2019, p. 309). The participants' "playful, fluid and multimodal practices allowed making choices in terms of what digital spaces to use, what communities to join, and what resources to explore" (Tour, 2017, p. 15).

Connections include communities of practice (Wenger-Trayner & Wenger-Trayner, 2015) such as the GO-GN network which focuses on research in open education (About GO-GN, n.d.). Wenger-Trayner and Wenger-Trayner (2015) describe characteristics of communities of practice that include problem solving, requests for information, seeking out experience, reusing assets, coordination and synergy, growing confidence, discussions of new developments,

initiating new projects, identifying gaps, and visiting. These qualities are evident in the lived experiences of Andromeda and Izar as shared in their open MDL productions (blog posts).

Differing from communities of practice, networked teaching and learning through/with connections (Lohnes Watulak et al., 2018; Mirra, 2019; Mirra & Garcia, 2020) is reflective of Gee's (2017) description of an affinity space (see glossary) since it provides flexible and fluid structures to engage with others through a computer screen. Affinity spaces, according to Gee (2017), include participants' common interests where anyone can contribute, hold a distinction between individual and community knowledge, include flexible ways for interactions to involve external sources of ideas, holds tacit knowledge as commonly accepted, embraces varying forms of participation, where status is achieved through a variety of contributions, and roles include both helper and teacher (Gee, 2015). Although participants in this research describe involvements in some form of community of practice and connected networks relating to teaching and learning, those involved in GO-GN (Andromeda and Izar) and Open/Technology in Education, Society, and Scholarship Association (Andromeda, Izar, Lyra, Orion, and Rigel) specifically focus efforts on enhancing and designing their OEPr and apply MDL processes and productions to building connections and relationships through their computer screens (GO-GN, n.d.).

As a result of the COVID-19 pandemic, communities of practice and personal/ professional learning network activities occur predominantly through computer enabled media and digital communications. Connecting through the screen is fraught with power dynamics and concerns of accessibility, as Lyra describes in their lived experiences in one community of practice when requesting a transition from in-person to digitally enabled planning meetings. Participants describe approaches to their OEPr in course designs, course elements, and throughout the design process, to develop relationships, structure opportunities for connections, and build on the learning of others in humanizing ways that include sharing, reuse, and remix of

materials and methods to communicate with students and peers, done through active and sometimes playful engagements in communities of practice and through networked learning (Bozkurt et al., 2019; Brown et al., 2022; Couros & Hildebrandt, 2016; Mirra, 2019; Nascimbeni, 2018; Roberts, 2022).

5.3.3 Connecting with equity, care, and social justice

Participants in this research share stories of focusing on equity, care, and social justice in their OEPr. This transformational work is where participants' connective skills and fluencies come to "live, learn, and work in an interconnected digital world, enriched by collaboration with others locally and globally" (Martinez-Bravo et al., 2022, p. 6). UNESCO (2013) recognizes the importance of teachers as knowledge gatekeepers who play a crucial role in connecting society, institutions, and individuals, and the importance of tools, resources and competencies in MIL to "guide, teach and train future workers and agents of change" (p. 48) as essential for change-making to occur. Feelings of agency are a component of this crucial role played by teachers and teacher educators, particularly in the process and production of MDL in an OEPr.

Although a deeper exploration of theories and concepts relating to the term 'agency' may be fruitful grounds for further research, as suggested by Biesta et al. (2015) the notion of teacher agency in this research focuses primarily on how the participants' agency as TEds impacts the building and maintaining of connections. For this research, agency is defined narrowly as a "quality of the engagement of actors with temporal–relational contexts-for-action, not a quality of the actors themselves" (Biesta et al., 2015, p. 626). Agency foregrounds the concept of literacies as a visible and social process (Belshaw, 2011) and results from "the interplay of individual efforts, available resources, and contextual and structural factors as they come together in particular and … unique situations" (Biesta et al., 2015, p. 626).

For this dimension of the discussion, the thinking from Arendt provides a lens through which I can focus on agency within the participants' lived experiences with MDL and OEPr in

how they may "feel empowered to act in public and what spaces and norms must exist for people to engage, alongside others, in the world" (Mihailidis et al., 2021, p. 5). As suggested by Bali and Caines (2018), when considering the participants' agency in their MDL processes and productions, I recognize differences in their "sense of self-efficacy, confidence, belief in their own agency, and willingness to take ownership, whether this is based on personality, past experience of marginality or power, or intersectional identity" (p 7). From the findings I notice that participants' feelings of agency in relation to MDL are shaped by their connectedness, and their belief that connections are transformative, particularly when equity, care, and social justice are at the forefront when fostering relationships, collaborating, and building on the learning of others. For example, Leonis' stories of video production reveals how feelings of agency grew while developing their MDL through collaborations with others experienced in YouTube and video creation. Leonis describes a sense of self-efficacy (Bandura, 2012) and confidence, and belief in the transformational power of video production, since these videos focus on TCs and students from marginalized communities. This in turn enhances relationships through the sharing of stories of struggle, building on the learning of those knowledgeable collaborators.

I notice that participants in this research consider connections within their OEPr strategically, with a focus on equity within a social justice framework (Bali & Zamora, 2022; Lambert, 2018), modelling this ethos both implicitly and explicitly. Lambert identifies three principles of social justice applicable to an OEPr – redistributive justice, recognitive justice, and representational justice. Redistributive justice focuses on the availability of free educational resources to ensure affordability and access to course materials (Lambert, 2018), something that is evident for example in Andromeda, Aquila and Rigel's experiences creating open course materials. Recognitive justice focuses on the inclusion of curriculum materials, assignments, and feedback processes that are representative of marginalized and diverse viewpoints and experiences (Lambert, 2018), which is explicitly evident in the experiences of Andromeda,

Aquila, Leonis, Orion, Polaris, Perseus, Rigel, and Sabik. Representational justice focuses on self-determination, co-construction, and facilitation so that silenced or marginalized voices and minority viewpoints are grounded within course design processes and production (Lambert, 2018). This is exemplified in the lived experiences of Andromeda, Aquila, Lyra, Polaris, and Sabik as shared in their interview stories. Lambert's redefinition of OEPr includes the "development of free digitally enabled learning materials and experiences primarily by and for the benefit and empowerment of nonprivileged learners who may be underrepresented in education systems or marginalised in their global context" (Lambert, 2018, p. 14). What crystallizes within the findings in this research is how the participants, as TEds who shape the learning experiences of their TCs, provide media production opportunities for marginalised voices to emerge and for silenced voices to gain confidence through facilitation and co-construction as ways and means of connecting these stories through the screen to community and/or global issues and struggles.

Participants, particularly Aquila, Dorado, Leonis, Perseus, Sabik and Vega, seek and find ways to share and collaborate openly with considerations toward equity, diversity, and inclusion (Inamorato dos Santos, 2019). This includes an awareness of the potential for connections and course designs to be inclusive, equitable, and diverse, particularly in how technologies, autonomy, purpose, skills, social supports, and learning materials enable or constrain marginalized populations (Lambert, 2019). Participants in this research recognize and acknowledge the barriers they face such as their need for time, pedagogical and technical supports, and their own pace for professional learning (Inamorato dos Santos, 2019). This is echoed in Sabik's experiences with equity and care in course work through the co-design of the course syllabus with a focus on decolonizing strategies.

Participants mention how they attend to the issues of care and equity, as suggested by Bali and Zamora (2022), where the notion of unconditional hospitality or intentionally equitable

hospitality address issues of care and forefront how connections are designed within a course. Conversations occur with a variety of media and digital productions as seen in the findings. Participants describe how they facilitate from a position of caring without devolving to "paternalistic knowledge of how participants wish to be seen and heard, but one that focuses on resisting power dynamics that suppress agency of those furthest from justice, yet opening a hospitable space for each participant to join and participate on their own terms" (Bali & Zamora, 2022, p. 9). Pluim and Hunter (2022) highlight the importance of embedding an ethos of care that is bidirectional and includes mindfulness practices since there is now "a greater pull to design a learning environment that anticipates our students' social and emotional needs" (p. 301). This reaffirms the words of bell hooks that to "teach in a manner that respects and cares for the souls of our students is essential if we are to provide the necessary conditions where learning can most deeply and intimately begin" (hooks, 1994, p. 13). This highlights the critical importance participants place on creating space for media productions and media-making processes that model, critique, and exemplify an OEPr that is equitable, caring and socially just.

An element that connects to socially just educational practices and teaching for resistance, particularly those within an OEPr, emerges from the notion of epistemic justice as outlined by Wallis and Rocha (2022). These authors draw on José Medina's conceptual framework of epistemic injustice to identify learning design choices and group activities with a focus on testimony, epistemic virtue, epistemic vice, epistemic friction, meta-insensitivity and meta-lucidity. Although this may be worthy of deeper reflection, a brief glance illuminates how being socially connecting with others in meaningful ways can enhance equity, care, and socially just practices in teaching and learning. This is echoed in Santo's (2013) notions of critical participatory cultures grounded in 'hacker literacies' which are often viewed as counter-cultural and apply resistive approaches when acquiring MDL. Opportunities include building individual expertise, guiding learners in turn-taking, emphasizing factual feedback, and evaluating the

learning process (Wallis & Rocha, 2022). Learning activities such as social annotations that include critical commentary, explanatory notes or personal meanings (Danesi, 2000) such as jigsaw, think-pair-share, and challenge cycles are suggested as strategies to design for epistemic justice through beneficial epistemic friction (Wallis & Rocha, 2022).

One final component relevant to this dimension with a focus on connections is Mihailidis' et al., (2021) exploration into social justice aspects that outline three core assumptions for media literacy: "media literacy creates knowledgeable individuals, empowers communities, and encourages democratic participation" (Mihailidis et al., 2021, p. 1). Mihailidis et al,. (2021) suggest the

> *"collective power of the community that's most important for media literacy practices to thrive"* – building a community of practice within and between faculties of education in order to dismantle power structures within siloed systems and critique capitalist competitions between sites. A focus on connecting and building community is hampered by literacy practices which promote "democratic participation but assumes Western Eurocentric approaches and largely ignores the structural inequities perpetuated" (Mihailidis et al, 2021, p. 9).

This speaks to a turn toward MDL practices that follow an educommunication approach, which may offer an alternative pathway for connections and MDL productions within equitable, caring and socially just OEPr.

5.4 Dimension Four: Criticality

"Critical thinking requires us to use our imagination, seeing things from perspectives other than our own and envisioning the likely consequences of our position." bell hooks

Drawing on the dimension of social justice from the previous section, the critical dimension of MDL is illuminated through this quote by bell hooks. I notice that MDL takes an intentional shift in critical and imaginary thinking when teaching with an infusion of MDL within an OEPr for

the TEds' in this research. Criticality not only problematizes their use of technologies when applying MDL into teaching and learning, but is also foundational when problem-solving as new technologies are integrated into educational contexts within teacher education. This is suggested by Martinez-Bravo et al., (2022) when emphasizing criticality in digital literacy since it "constitutes a great commitment to the construction of significant ecosystems and the development of an awareness and values connected with social and civic responsibility in a globalized world" (p. 11). The findings in this research support this conception of a social and civic responsibility as exhibited by the participants, particularly when MDL is applied within their OEPr. This occurs through a critical examination of identity, the reception and emitting of media and digital productions, and the participants' decision-making about the circulation of learning artifacts. In this research criticality is evident as both cognitive and social dimensions of MDL and is defined as the practice of critique through close and careful examination and questioning of objects, actions, or ideas of decisive importance (OED Online, 2022).

5.4.1 From the frameworks

Criticality is embedded in each the frameworks I explore for this discussion (see Table 4).

- Hoechsmann and Poyntz (2012) mention criticality in media literacy as being essential for "critical engagement with mediated cultures … to engage with the technologies, literacies, and everyday cultural practices that can foster economic participation and social inclusion" (pg. 201).
- MediaSmarts Canada uses the terms finding and verifying in a process of evaluation, authentication, and critiquing sources of information garnered from the internet (McAleese & Brisson-Boivin, 2022).

- UNESCO (2013) includes the element of criticality within the definition of MIL whereby citizens "access, retrieve, understand, evaluate and use … media content in all formats, using various tools, in a critical, ethical, and effective way…" (p 29).
- Belshaw (2011) identifies critical as one of the eight digital literacies, tying it closely to civic literacy, and examines semiotic domains for evidence of exclusion, underlying power structures, and assumptions embedded in literacy practices.
- In their examination of international digital literacy frameworks, Martinez-Bravo et al., (2022) identify criticality as a prominent dimension with implications "when faced with diverse situations, cultivating social and civic responsibility, as well as developing the judgment to assess and make effective decisions in the face of risks, and to develop attitudes of self-control, autonomy, and flexibility" (p. 5).
- DigCompEDU places the focus of criticality on fostering learners' digital problem solving, reflecting on teaching strategies that foster learners' competencies with technology, and the critical evaluation of credible and reliable sources of information (Redecker, 2017).
- The DQ global standards place critical thinking as one of twelve future-readiness skills connected to cyber security, digital empathy, digital footprint management, MIL, and privacy management (DQ website, n.d.).

Criticality focuses on the participants' careful, collaborative, and informed critique of technologies, structures, and participation. For the participants in this research criticality explicitly includes examinations of their own practice, and that of organizational decision-makers. From their lived experiences I notice when participants mention intentional actions to counter techno-deterministic educational technology sector narratives, particularly the notion of knowledge scarcity (Stewart, 2015a) and how they resist attentional economies with its focus on clicks and time on task. Participants shared their intentional decisions to oppose the academic

surveillance of students (Kuhn & Raffaghelli, 2022) and how they combat the market logics of referencing students as consumers (Mirra et al., 2018). Dimensions that emerge from the findings and discussed here include criticality in the selection of tools, technologies, spaces, and places for MDL within an OEPr, critical examinations of boundaries relating to identity and power structures (Koseoglu, 2017; Stewart, 2021), criticality in data literacies and algorithmic bias (Nichols et al., 2021; Raffaghelli & Stewart, 2020), and a critical focus on intentionality applied to human↔technology↔world relationships (Ihde, 2015; Kallinikos, 2002).

5.4.2 Criticality in the selection of tools, technologies, spaces, and places

Careful and reasoned examinations of software and hardware for pedagogical applications for use in FoE are not usually conducted by faculty but rather by technology support staff or purchasing agents. For many participants in this research, their OEPr includes criticality through self-reflection and examination of platform technologies for "predictive logics and commercial interests … which can work against their pedagogical values and commitments" (Nichols et al., 2021, p. 348). Platforms are defined as both infrastructures upon which applications are constructed and operated, as well as the "online networks that facilitate economic and social exchanges" (Nichols et al., 2021, p. 345). For participants in this research, their MDL within their OEPr includes a critical examination of platforms, tools and technologies not just for technical construction or socio-economic dimensions (Nichols et al., 2021) but also for pedagogical applications. Criticality of tools and technologies is evident in Rigel's questions about platform capitalism and Perseus' comments of technological architectures that embed market logics to perpetuate attentional economies. For Izar and Orion this criticality includes decisions relating to tools and technologies for the curation and aggregation of student work with a view toward technological agnosticism.

Implicit in the findings of participants' lived experiences with platforms and technologies are critical approaches that examine hereditary concepts of MDL that spotlight the integrations

of users, technologies, and content into educational contexts and distributed within "technical infrastructures and socio-economic relations" (Nichols & Stornaiuolo, 2019, p. 14). Conncting to Nichols and Stornaiuolo's (2019) research into digital literacies, I notice that Andromeda and Rigel question the impact and efficacy of integrating social media into course designs, Dorado and Leonis examine the synchronous or asynchronous delivery of content and connections in light of pandemic teaching and learning structures, Polaris questions the purpose of video captured lectures as a barrier to engagement, and Carina and Perseus critically analyze the use of video-conferencing for classes and seminars.

Participants in this research share their critical approaches to analyzing spaces and places for learning engagement. Nichols et al. (2021) suggested that criticality in MDL is helpful in identifying and analyzing digital practices, in order to contribute to a "wider repertoire of tactics for mapping, critiquing, and transforming digital ecosystems" (p. 345) that has implications for teaching and practice. For Andromeda, Aquila, Perseus, Polaris, and Rigel this means explicitly teaching students to identify invasive forms of digital and media ownership and governance that infiltrate and underpin the technologies being used in the education sector (Nichols & Stornaiuolo, 2019).

Criticality involves the creation of spaces for building knowledge that is grounded in the labour of marginalized communities; interrogating where people in positions of power inadvertently or intentionally erase the knowledge work created, as suggested by Collier and Lohnes-Watulak (Mackenzie et al., 2021). This is of particular importance to Canadian TEds in FoE in light of efforts to address and respond to issues identified in the Truth and Reconciliation Commission's Calls to Action (The Truth and Reconciliation Commission, 2015). Opportunities to remix content and produce multimedia elements in courses in the FoE offers students a creative way to show what they know, thus "troubling the traditional definitions of academic authorship and knowledge … these new forms could validate understandings rooted in

communities of colour, indigenous communities, and queer communities" (MacKenzie et al., 2022, p. 310). Opportunities for marginalized populations to share their stories as modelled in FoE, can shape the way TEds and TCs address concerns relating to access, equity, indigeneity, diversity, and marginalization. This echoes how criticality is applied to expressions of social imaginaries, described as the shared collections of artefacts, images and sounds constituting the representational milieu within which individuals give and receive communicated knowledge (Wallis & Rocha, 2022).

For the TEds in this research, this approach to criticality includes questioning and examining the tools, technologies, spaces, and places where teaching and learning occur, not only for their own courses, but also within the K-12 schools into which their TCs deploy. This is evident in Perseus' experiences with critical approaches to the video-enabled teaching spaces resulting from COVID pandemic teaching, Leonis' efforts to engage marginalized Muslim-Canadians' voices in video storytelling, and Aquila's critical views of the learning management system (see glossary) when sharing experiences of students communications since the learning management system "*discussion forum is a place where ideas go to die*".

5.4.3 Criticality in examining boundaries

Since "space without boundaries is not space, it is a chaotic void, and in such a place no learning is likely to occur" (Koseoglu, 2017), the research findings exemplify the lived experiences of the participants' teaching and learning environments that can best be described as being bounded yet open (Palmer, 2017). Boundaries are created through the participants' critical use of digital tools such as the learning management system (see glossary), free and open software (see glossary), and open/closed proprietary educational technologies. One example relates to Orion's lived experiences and efforts to consistently create learning spaces outside of the learning management systems that most higher education environments use for student online learning. This bounded,

yet open, description of learning spaces is also exemplified in Aquila's use of Discord as the primary learning space for students in their courses.

Efforts by the TEds in this research to apply an intentional and critical lens to materials, processes, and technologies for teaching and learning can be clouded by a veil of protectionism. I notice how the participants' stories reveal how they work within, yet push against the tensions between protection and permissions, as exemplified by Merak's comments of the feelings of stress between their desire for students to share openly versus their need to ensure student safety. Participants in this research provide shared examples of how they negotiate with themselves and their students when making intentional decisions to share teaching and learning transparently and openly with each other, but also when considering intentional choices to share with wider audiences, as exemplified in Andromeda and Lyra's open Pressbook (see glossary) publication created by students in their courses. This critical approach also recognizes the ongoing efforts participants make to break down barriers and confront ongoing issues that occur while infusing MDL into their OEPr. For example, Perseus states a commitment to push boundaries for scholarly works with a commitment to only publish in open access journals which exemplifies a recognition and awareness of the needs of opening boundaries to a broader audience. Sabik mentions a commitment to push boundaries of decolonization and amplifying marginalized voices, which exemplifies an MDL focusing on access and entry. Andromeda relates a commitment to designing options for open learning spaces within their course designs which exemplifies a stance toward knowledge building and sharing.

Criticality is also evident in the findings in how participants examine, impose, and push through boundaries as they construct and share their digital identity and in how they make decisions about circulating and sharing their own or student media productions and learning artifacts (Veletsianos & Stewart, 2016). Boundaries for the participants involve how, where, what, and when they disclose academic and personal information that shapes their identities

(Belshaw, 2011; Cronin, 2017; Veletsianos & Stewart, 2016). Critical approaches for disclosure are selective and intentional, and are dependent on the networks or communities in which they are participating (Veletsianos & Stewart, 2016).

Although I prefer the term digital persona (Hinrichsen & Coombs, 2013) to describe an individual's digital presence, participants in this research share stories of their strategic decisions to cross boundaries or stretch the boundaries within which their digital persona is shared. This includes specific approaches for the use of singular or multiple avatar images, both realistic and figurative, to shape their complex digital personas, thus applying flexible, multiple, and nuanced representations of self in digital spaces (Hildebrandt & Couros, 2016; Hinrichsen & Coombs, 2013; Veletsianos & Stewart, 2016).

The teacher educators in this research apply their media skills and fluencies to the production and creation of digital avatars, voices, and multimodal renderings of who they are *becoming* as teacher educators, scholars, and open education practitioners. This is seen for example in the images, audio recordings, and web curation work done by Vega or the web curated materials by Polaris, shared openly as part of their course content collections which are critically shaped and created to support student learning. The boundaries for transitional and evolving digital persona link to the notion of "being" and "becoming" as identified by Gee (2017), emphasizing this state of impermanence of digital personas. In this research *becoming* an open educator or *becoming* media and digitally literate shifts toward the liminality of these persona, whereby participant TEds are continually ***becoming*** by crossing personal and professional boundaries, both self-drawn and organizationally expected. Tur et al., (2020) posit that this process occurs through boundary crossing as a right-of-passage involving doing (experiences), sense making (knowledge) and identities (being) that are transformative, troublesome, and liminal.

Nascimbeni and Burgos (2016) suggest that an open educator aims to work "through an open online identity and relies on online social networking to enrich and implement his/her work, understanding that collaboration bears a responsibility towards the work of others" (p. 4). Beyond creating and communicating digital versions of themselves and course materials, the participants set boundaries in their personal and professional communications within intra- and inter- professional networks while they web-together learning opportunities for their students and themselves in ongoing and dynamic ways (Mentis et al., 2016; Veletsianos & Stewart, 2016). The integration of internet publication for circulating and sharing learning activities through blogging or other social media tools is sometimes integrated into course work for students, which in turn requires the participants themselves to model how to open boundaries safely and ethically when communicating to an unknown audience using multimedia productions. For example, Perseus ponders how to pay close attention and scaffold reflective, critical, open participation in order to discover boundaries between personal/professional and home/school for self and students. Critical media awareness is modelled through text selection, use of space on the 'page', integration of accessibility standards, use of non-text-based elements such as icons or images, an increasing awareness of Creative Commons licensing, and the application of a publication status ranging from private, unlisted, or publicly accessible communications, as explored in teacher education by Paskevicius (2021). In this way, the participants indicate how they model efforts to critically analyse and push through organizational structures that close boundaries and negate student voice. Several participants mention having critical conversations with students about the safe and ethical circulation of media productions, particularly when issues arise.

5.4.4 Criticality in datafication

Data literacies and datafication are not new to education. Historically, data collection and analysis at the school or system level focus on attendance and behavioural data (Selwyn, 2023). Teachers focus on the collection and curation of information and data in efforts to learn more

about their students in order to plan their teaching and target student learning needs. Data collection at the educator level is in part a way to build relationships, by getting to know and understand details about students' lives and interests, but also to examine, analyze, visualize and profile student progress and skill development (Selwyn, 2023). In considering the definition of algorithms as systematic, step-by-step methods of solving a certain kind of problem or of representing a procedure (Danesi, 2002), teachers and teacher educators tacitly understand how algorithms apply to teaching practices. For example, consider how teachers deconstruct learning into component parts to ensure a logical scaffold from one skill to the next, particularly for complex learning tasks. Data literacies in the hands of individual educators such as the participants in this research, focus on datification in service of the needs of students, as exemplified by Izar's question "who does it serve?"

Current education systems at the organizational level are now driven by the perceived need for collecting 'big-data', yet using algorithmic logic and opaque and discriminatory practices can result from datafication (Stewart & Lyons, 2021). Systems that turn socio-cultural learning into "quantifiable, extractable data" through the "proliferation of platform logics" (Nichols et al., 2021, p. 346) potentially turning teaching and learning activities into opportunities for surveillance and data extraction (Nichols & Stornaiuolo, 2019; Pangrazio & Selwyn, 2019). A critical literacy for educators is found within this need to turn toward "particular technical and economic substrates at work in digital platforms" (Nichols et al., 2021, p. 347). Thus, critical examination of datafication should be considered, in light of the push to "centralize user-data, erode expectations for privacy, and expand state and corporate mechanisms for raced and classed surveillance" (Nichols et al., 2021, p. 346). This critical perspective is evident in the participants' lived experiences. For example, in Rigel's connection to data footprints and who owns the information students generate, in Perseus' comments on the risks and rewards when using educational technology systems, and in Aquila's lived experiences in

questioning how Indigenous knowledge that belongs to the community can be shared within anti-capitalistic notions of knowledge acquisition.

Criticality in datafication is suggested by Selwyn et al., (2022) as a starting point for teacher inquiry and professional judgement. This is echoed in the current push for educators, and thus TEds, to put data literacies at the forefront of their teaching practice (Raffeghelli, 2022; Raffeghelli & Stewart, 2020; Stewart & Lyons, 2021). Participants share feelings of responsibility when designing learning activities for students that encourage or expose them predatory media production tools. Awareness of issues relating to privacy and data extraction is evident in the interview responses, focusing more on technical considerations "relevant to read, manage, process and visualize data, and interact with algorithms" (Raffaghelli, 2022, p. 82). There is some suggestion that participants are moving toward proactive practices with data literacies that include students in the conversations relating to their data usage (Atenas et al., 2021; Raffaghelli, 2022) since there is a need for "criticality of pedagogical praxis in the face of automation and AI in teaching" (Gallagher et al., 2021, p. 427). Shifting the students' role from passive participant in the hidden curriculum surrounding data extraction (Selwyn et al., 2023) is evident in Orion's question of who owns student data, or in Izar's questions about TCs taking pictures in a classroom with a cell phone and knowing where those images may be stored.

Criticality in MDL within an OEPr includes pushing toward opening datafication mechanisms to model transparency, particularly when learning management system or research publications are located within black boxed (see glossary) or paywalled (see glossary) locations. Participants mention this initiative within their OEPr in order to present learning to audiences beyond the confines of their course. They reflect in their lived experiences of additional challenges, particularly with data management, when course work is shared within open and public knowledge spaces such as the OER-Commons or Wikipedia, as a way to mobilize learning for the greater good of world knowledge. Participants report a process of continual

negotiation and critical intentionality; considering their own and their students' safety, security, privacy, and permissions.

5.5 Crystallizing the Discussion

Media and digital literacies reside in the intentionality between human and world, shifting how humans interact through technologies with/in the world, impacting how they read the word and read the world (Freire, 2018/1970). The presence or absence of skills, fluencies, competencies and literacies with media-based technologies and digital/electronic devices will impact communications, creativity, connections and criticality when building and maintaining relationships and intentions emerging from human↔technology↔world interactions (Ihde, 2015). In this discussion, the dimensions selected shine light on the participants' shared stories of struggles with knowing enough and finding time to learn more, about technology integrations that would benefit their MDL within their OEPr with/for their students in order to collaborate and co-construct learning. This struggle was particularly evident in Andromeda, Lyra, and Orion's interviews.

Through this discussion, I make sense of these lived experiences within the broader fields of media and digital literacy, open education, and teacher education. What emerges is a story of MDL relevant to communication, creativity, connecting, and criticality. Although I juxtapose and merge ideas to shape my understanding, I recognize that this discussion is a liminal space, shifting through and between what is known and unknown as evidenced in the findings, *becoming* as it is written. In this way I generate "knowledge that is partial and prismatic. Knowledge that admits its failures and opens up new ways of thinking" (Cannon, 2018, p. 572).

As I crystallize the findings of this research in this discussion I focus through the dimensions evident within the participants' ethos and stories. I revisit the entangled conceptions of MDL as remixed within this research. I expose the confusion emerging between the conceptions of media and digital skills, fluencies, competencies and literacies (see Figure 10)

and examine understandings of what is encompassed in the notion of teaching practice (see Figure 2). As I crystallize conceptions, what becomes clear is the complex and sometimes chaotic assemblages gathered from this exploration.

Chapter 6: Conclusion

"By instructing students how to learn, unlearn, and relearn, a powerful new dimension can be added to education" (Toffler, 1970, p. 211).

Toffler reminds me of the substantial impact of change in our current and modern times, particularly in the field of teacher education. If those who are teaching others to teach reading, writing, and a multitude of other skills, fluencies, competencies and literacies are not prepared to unlearn and relearn, teacher education will fail future generations. It is through communicating, connecting, creating, and critically analyzing the process, products, and presentations of our teaching practices as teacher educators, and through striving to 'become' media and digitally literate within open educational contexts, that the field of teacher education can honour our past and move into the future.

At the end of this dissertation process and production, I am reminded that I have engaged in the heteroglossia (diverse voices within creative constructions), polyphony (unison of multiple elements including media constructions), and dialogism (dialogue required for change to occur) (Hoechsmann, 2019) that are embedded within, and has shaped the construction of this research. The diverse voices and creative constructions, as artifacts of this research, are symbolic and evidential elements of MDL in the lived experiences of the participants, captured within and capturing a moment in time. It is through closer examination of the polyphony of elements of the media constructions – the interview recordings, transcripts, word cloud collection, media artifacts, and coding iterations - that a unifying harmony emerges. I consider this dissertation as an opportunity for ongoing and open disputatio and dialogism to occur (Hoeschmann in Mackenzie et al., 2023).

Bakhtin's (1981) notion of "unfinalisability" reminds me that the research results, as well as the lived experiences of the participants, are entities in transition, changed and changing

through this process of writing, feedback, and active reflection. It is through communication, connection, creativity and criticality that this transitional and liminal work continues to evolve.

Although the path is set for this concluding section of this dissertation, it is up to you, the reader, to determine your way through this chapter. In the next section I share summaries of the information that I have already shared, in an effort to refocus and crystallize this dissertation. I then share some contributions this dissertation makes to the fields of media and digital literacies, open educational practice, teacher education, and qualitative studies in education. This is followed by implications and limitations of this research, and concludes with some recommendations and final thoughts.

6.1 Chapter summaries

In Chapter one I introduce the dissertation topic and an overview of this research inquiry. This introductory chapter identifies the significance of the research, the rationale for the research questions, my positionality as a researcher within the context of teacher education and the fields of media and digital literacy. It outlines the alternative dissertation format I take to present this post-intentional phenomenological study of teacher educators' lived experiences with media and digital literacies in their open educational practices.

In Chapter two I present the literature review, which begins with theoretical frameworks underpinning this research. I explore the theories of socio-constructivism, connectivism and pragmatism. I bring a focus on phenomenology to describe and differentiate between transcendental, interpretive, and post-intentional phenomenology. I then share conceptual frameworks for teacher education, open education, and literacies. For the broader field of education, I narrow my focus to examine the concept of education from a teacher educators' perspective. From the broader field of open education, I identify and explore the concept of open educational practices with a focus on teaching and learning in higher educational contexts. I share current and historical conceptions of literacies with a focus on media and digital literacies.

I conclude this chapter with an attempt to untangle concepts surrounding skills, fluencies, competencies and literacies in the field of media and digital education as it applies to teacher educators.

Chapter 3 contains the research design for this doctoral inquiry. I present the methodological design components relating to post-intentional phenomenology and introduce the application of a crystallization methodology to my research. I then identify methods for gathering data, the research phases and timelines, identify the participant selection process and methods to ensure anonymity, the interview design and process, and the coding and analysis process. This chapter concludes with my considerations for validity and specific ethical research practices.

Chapter 4 presents the research findings. I reiterate the research question in order to position the findings within the framework for this doctoral inquiry. I describe my data analysis process as a diamond in the rough. I outline the facets revealed from the data for this study: becoming a teacher educator, open educational practices, and media and digital literacies. I begin with origin stories of becoming a teacher educator. Facets included in the OEPr section of the findings include access, choice, and connections. Facets identified in the media and digital literacies section include communication, creativity, and criticality. I conclude this chapter with some crystallizing thoughts about the findings.

In Chapter 5, I present the discussion of the findings within four dimensions of media and digital literacies, with explicit connections to MDL research frameworks that shape the OEPr of the participants in this research. Dimension one identifies elements of communication, with a focus on communication as a human right for a common good and on human beings as storytellers by nature. Dimension two focuses on creativity with remix and problem solving identified as creative acts. Dimension three examines connecting with communities with a focus on equity, care, and social justice. Dimension four explores criticality within the selection of

tools, technologies, spaces, and places, as well as a critical examination of boundaries and criticality in datafication. The chapter concludes with a crystallization of the discussion.

Chapter 6 concludes this dissertation document with contributions, implications, limitations, and final thoughts. This chapter begins with a summary of the thesis. In the reflections I identify why this study is significant not only as a contribution to research in teacher education, but also as the impetus for teacher educators to infuse media and digital literacies and open educational practices into their work with teacher candidates. It offers insights into the ways in which teacher educators can shift their educational practices in communication, creativity, connectedness, and criticality beyond the physical and temporal constraints imposed by faculty of education processes. Implications and recommendations for further research are presented.

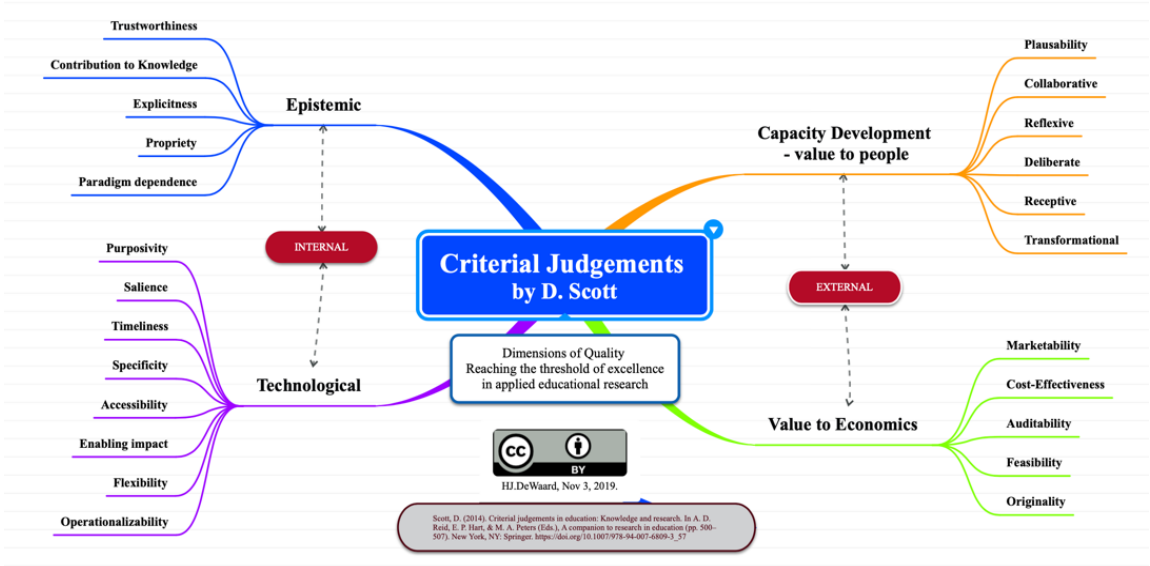
6.2 Contributions

As part of the P-IP methodological process, this critical reflection provides some insight into possible and potential contributions of this research, using criterial judgements identified by Scott (2014). Tracy and Hinrichs (2017) share eight criteria for qualitative quality which include elements relating to the implications and limitations of educational research. These include whether the research focuses on a worthy research topic, incorporates rich rigor, reveals an ethos of sincerity, demonstrates credibility, resonance, significant contribution, ethics, and meaningful coherence. Although it would be of value to explore each of these, I will limit my concluding thoughts to specific criteria for qualitative quality found in this research. In examining implications relating to this doctoral inquiry, I will touch on how this dissertation is a worthy topic since it has relevance, timeliness, significance, and interest to the field of study. The credibility of this research is characterized by explication of tacit knowledge, crystallization, and member reflections. Resonance relates to how audiences of the research may be moved by evocative representations and transferrable findings (Scott, 2014; Tracy & Hinrichs, 2017).

Since all "judgements about educational matters are inferential" (Scott, 2014, p. 503), the judgements identifying contributions of my research are inferred. Dimensions to use when assessing the internal and external worth of research in education include epistemic, technological, capacity development, and value to economic contributions (Scott, 2014). I crystallize elements of the criteria identified by Scott (2014) (see Figure 24) to the following areas of focus - my contribution to the study of media and digital literacies in education, the application of inquiry into the teaching and scholarship of teacher educators in Canadian contexts, and the value of MDL research into open educational practices.

Figure 24

Criterial Judgements



Note: compiled and remixed from Scott, 2014. Published under CC BY license (DeWaard, 2019).

6.2.1 Contribution to the study of media and digital literacies

This dissertation research makes an original contribution to knowledge in the field of media and digital literacies in distinctive ways. The conceptual analysis of media and digital skills, fluencies, competencies and literacies (see Figure 10) supports the shifting conceptions of what being literate means in current educational contexts and adds to conceptual clarity. The

spirals toward literacy that I illuminate in this research may bring some bearing to the ongoing calls for literacies in multiple and varied fields of endeavour within education and beyond.

This research contributes to knowledge about media and digital literacy research by examining the lived experiences of how TEds infuse MDL into their teaching practice. Just as McLuhan's tetrad proposes, and evidenced in the lived experiences of the participants in this research, with every medium and message for media production within their OEPr, there is not only enhancement and retrieval, there is also reversal and obsolescence (McLuhan & McLuhan, 1992). Knowing and recognizing where and how this tetradracic process occurs can add criticality to the endeavours TEds make when teaching with an MDL focus.

This research confirms what (Buckingham, 2020) suggests - that media in education is shaped by "purposeful, critical use … of communication" (p. 115). This is less about learning technical skills and fluencies, and more about deeper awareness of critical aspects of media – "media language, representation, production, and audience" (Buckingham, 2020, p. 58).

6.2.2 Contribution to the study of teacher education

Teaching in teacher education is a complex task (Livingston, 2017). Through this research I recognize and emphasize this complexity in the art and science of teaching (see Figure 2, see Figure 3). Teaching encompasses diverse factors relating to design, content, assessment, sociality, technology, community, and cognition. Elements and dispositions include patience, compassion, tenacity, character, pleasure, learning, authority, ethics, order, and imagination (Banner & Cannon, 2017/1997). By considering these factors as being relevant to the lived experiences of TEds in Canadian FoE contributes to the value that should be considered in the profession.

With the creation of the gyroscopic image (see Figure 22) comes a second contribution to the study of teacher education. This complex navigational aid can be applied to the management of the ever-shifting terrain of teacher education. Through this remixed image, focusing on the

infusion of MDL into an OEPr, I contribute to the technological dimension of specificity and salience (Scott, 2014). Specificity is evident in the key elements that emerge from the participants' efforts to communicate, connect, create and become a critical emitter and receptor of media and digital processes and productions in their work as teacher educators. Salience is the noticing of information that is notable (Scott, 2014). This is evident in the gyroscopic navigational image where I place the teacher educator in the center of the image, surrounded by the moving parts representing their MDL within an OEPr. In this way, the centrality of teacher educators in this research is recognized.

Although the main focus of this research is grounded in the work of teacher educators, this work can support the infusion of MDL into other areas of study in teacher education or broader higher education contexts. For example, one extension of this doctoral inquiry is exemplified by my supporting work with students in the application of e-portfolios into the faculty of education with a focus on introducing and building MDL into the lived experiences of students and faculty.

This doctoral inquiry and resulting research contribute to explorations into the complex and diverse practices of teacher educators, thus modelling how MDL practices are not divided "according to binary oppositions, but instead moves fluidly between the ethical and the personal; the objective and the subjective; the creative and the critical. Practices spread across digital contexts and include social, cultural and political elements" (Pangrazio, 2016, p. 168).

6.2.3 Contribution to the study of MDL in OEPr

This research adds to global conversations and the growing body of scholarship in the study of open educational practices (OEPr) by focusing on facets of understanding about MDL as revealed through the lived experiences of TEds (see Figure 22). This research contends that MDL within an OEPr is not contingent on the use or application of OER, as mentioned in research (Cronin, 2018; O'Neill, 2021; Paskevicius, 2018) but on mediations and negotiations

within education focused communication, creativity, connections, and criticality, as revealed in stories of the participating TEds' teaching practices. From within these contested, situated, and contextual spaces, this dissertation research contributes to the growing awareness of how an open mindset in teacher education is not solely focused on overcoming 'know-how' in order to resolve technical obstacles, but in resolving to view teaching practices differently to support how learning can be achieved (Couros, 2006). The participants in this research continually negotiate and make critical decisions when dialing-it-up or dialing down (see Figure 8) their open educational practices, with awareness of media or digital engagements, as they design and work with students in their learning contexts. Similar to the findings of Paskevicius (2018), this research contributes insights into how the TEds who participated in this research infuse MDL into their OEPr; inviting learners to communicate, connect, create, and critically analyze process, products, and presentations within their learning practices. The participants come from diverse backgrounds in teaching and teacher education, with many holding years of experience as K-12 educators. These lived experiences with MDL are grounded in pedagogical and cognitive practices within the field of education in higher education contexts, but with deeply held connections to K-12 education. The collective expertise of the participants is not directly or explicitly tied to any field of study relating to media studies, media education, digital technologies, or open education.

The MDL within the participants' OEPr support the findings of (Cronin, 2017), Paskevicius (2018), and Oddone (2019). Cronin (2017) identifies four elements of open educational practices including balancing privacy and openness, developing digital literacies, valuing social learning, and challenging traditional teaching roles and expectations. Paskevicius' (2018) research identifies three categories of openness, which can be seen as sites where MDL contributes to OEPr, in explorations of open resources, engagements with open design tools and techniques, and open publications that engage in reflection, peer-review and contributions to

knowledge building. Similar to Paskevicius' (2018) findings, I see the lived experiences of the participants' MDL in their OEPr as varied, responsive to changing technological applications, complex, and not tied to the use of OER as primary teaching materials. The participants model a mindset and orientation toward an imaginative use of tools, teaching strategies, and technologies (Veletsianos & Houlden, 2020). Since "academics need to start from their teaching practices in order to find ways in which they can share and collaborate openly" (Inamorato dos Santos, 2019, p. 108) this shift in mindset contributes to clarifications necessary for understandings of the complexity of teaching in the open.

An additional contribution to the field of open education is the explicit distinction I make in the use of the abbreviation / acronym for OEPr. This provides a delineation between the current multiple meanings behind OEP – being applied to both open educational pedagogies and open educational practices. By creating the distinct abbreviation and applying the acronym OEPr to the concept of open educational practices, this contribution within the field highlights the distinctive difference between pedagogy and practice in the field of teaching, and contributes to a clarity to conceptualizations. Although pedagogy focuses on and relates to the act and actions of teaching and learning that usually occur in the classroom, I consider practices as a manifestation of everything educators ***are*** and ***do*** both in the classroom and beyond. Practices encompass and reflect the educators' personality, persona, identity, and ethos in how they select, use, and integrate MDL into their OEPr. Educators reveal, both physically and virtually, their identity and selfhood in their pedagogies which are one component of the overall conception of a teaching practice. Thus, I define OEPr as the sum total of an educator's internal ethos, acts of hospitality, and ways of being open, along with pedagogical decisions and shared scholarship.

6.2.4 Contribution to qualitative research in education

This dissertation contributes to qualitative research in education in its unique application of P-IP and crystallization epistemologies and methodologies (see Figure 1; see Figure 13) as

well as the application of the ALT-DISS multimodal format using Scalar software. This contributes to capacity development and provides a model for other researchers (Scott, 2014; Tran, 2019) not only to education researchers focusing on teacher education, but to qualitative research and multimodal dissertation applications in other fields of endeavour or other educational research inquiries. In this way, I contribute to the diversity of approaches that are opportunities to unsettle understandings of what P-IP, crystallization inquiry, and multimodal dissertations *are or can become* (Ellingson, 2014; Tran, 2019; Vagle et al., 2021).

This research contributes to capacity development and adds value to inquiry by/for people, aiding transformation and collaboration (Scott, 2014). Through the open approaches found in OEPr, this dissertation has been created and shared through an open, public-facing portal, where private and critical feedback is part of the process. Additionally, transformation and collaboration is evident in the many contributions to scholarly works in qualitative research in education that have been emerged from this doctoral inquiry. These include multiple peer reviewed publications and chapters focusing on digital literacy policy and practice across Canada (DeWaard & Hoechsmann, 2021) digital literacies in faculties of education in Canada (DeWaard, 2022), cross-cultural mentoring in professional learning (DeWaard & Chavhan, 2022), online course design (van Barneveld & DeWaard, 2021), assessment practices (DeWaard & Roberts, 2021), intentionally equitable hospitality (Bali et al., 2019), intentional open learning design (Roberts et al., 2022), and educommunication (DeWaard, In Press). Additional scholarly works include book reviews (DeWaard, 2020, 2021), research reviews and commentaries (Bozkurt, Gjelsvik, et al., 2023; Farrow, R. et al., 2021; Weller et al., 2023), and conference presentations. These contributions, in turn, have reciprocally shaped this dissertation.

6.3 Implications

I consider three implications emerging from my crystallizations of this research. First, I identify the need for professional learning experiences for teacher educators with a focus on media and

digital skills, fluencies, competencies and literacies. Second, program-wide implications of open educational approaches for FoE are suggested. Third, I explore the implications of alternative dissertation formats and technologies.

6.3.1 Teacher educator's professional learning needs

This research suggests the needs for a greater focus in teacher educator professional learning experiences relating to the implicit and explicit infusion of media and digital skills, fluencies, competencies and literacies particularly when these are immersive and collaboratively networked (Castaño Muñoz et al., 2023) that can be immersed and should be evident within the practices of teaching, learning, and scholarship of teacher educators, particularly when considering shifts toward an open educational practice. Although most participants confidently and explicitly shared their awareness of specific MDL when considering audience, text and production of learning materials or scholarly works, there is a need to address growing uncertainties about where or how to enact any MDL or OEPr in teacher education. In this research the participants reveal criticality, creativity, connections, and communicative strategies in their use of media and digital technologies in their teaching, which informs their negotiations within their OEPr. This research provides a view of how a deeper understanding of skills, fluencies, competencies and literacies with MDL can be enacted within a teacher educators' decisions and designs when teaching, learning, and sharing their research.

6.3.2 Program wide open approaches

Second, this research has implications for possible program-wide integration of MDL within an open approach among TEds through a scalar approach (Stewart et al., 2021), incorporating collaboration (Lohnes-Watulak et al., 2018), boundary spanning (Nerantzi, 2019), and networked practices (Oddone, 2019) and/or through open educational policy supports to combat issues of isolation within fractured faculty structures (Bossu & Stagg, 2018; DeWaard & Hoechsmann, 2021, Stewart et al., 2021). Participants in this research individually demonstrate

the application of approaches and technologies incorporated within an OEPr that promote opportunities for students to "develop their knowledge and literacies for working appropriately with copyright and controlling access to their online contributions, while presenting options for extending some of those rights to others" (Paskevicius & Irvine, 2019). By examining two worked examples from faculty of education courses, Stewart et al. (2021) reveal issues operating within multiple temporal, social, spatial scales and present a call for action to combat issues of control, bureaucracy and isolation. By modelling and infusing media and digital elements throughout their open educational practices, with a focus on communication, connectivity, creativity and criticality in course structures and designs, the participants demonstrate to their students and colleagues that academic work has fundamental value beyond the silos of faculty contexts, providing opportunities to engage more widely with learning communities in FoE across the country and/or around the globe (Paskevicius & Irvine, 2019).

6.3.3 Research in alternative formats

This research inquiry models the use of a post-intentional phenomenological philosophy and methodology (Kennedy, 2016; Vagle, 2018) in conjunction with an alternative dissertation format and explores a crystallization approach to the research of teacher educators' practices. The implication from this research is the potential impact resulting from this shifting nature of the form, function, and purpose of the dissertation in current times. The multimedia format of this dissertation models and reveals the potential for an ALT-DISS production. It is simultaneously process, production and presentation rolled into one interactive and fluidly linked digital document.

One challenge in the production and creation of this ALT-DISS format is acknowledging the intentionalities inherent in technology use and how relationships with/through technologies shape the research and the production of this multimodal dissertation. It is this conception of intentionality, as it relates to my researcher relationships as both emitter and receptor, and the

participants' relationships with/through technology, that needs to be recognized and acknowledged. These relationships are complex, complicated, and ever evolving. P-IP research recognizes these intentionalities within the relationships that humans have with the technologies they use, as well as how these technologies shape the relationships humans have with each other (Ihde, 2015; Rosenberger & Verbeek, 2015) and with the research productions. One constraint in this research hinges on my inability to share with explicit clarity or transparency, the intentionalities of the participants' lived experiences within their human↔technology↔world relationships. The participants reveal, through their lived experiences and shared artifacts their efforts to select and apply technologies with intention in their OEPr. This highlights the importance of cultivating awareness of the "intricacies involved in each technology-mediated interaction" (Hammershaimb, 2018). Their stories stand proxy for the actions and events that encompass their MDL in an OEPr.

I also recognize and acknowledge that intentionality and practice within human↔technology↔world relationships can be shadowed and opaque, often happening through black-boxed technologies (Kallinikos, 2002; Lloyd, 2019) within password protected spaces such as learning management systems or behind paywalled secure sites where research publications are warehoused. Although opening the dissertation is the goal, as contained on a Scalar instance, it is likewise constrained by digital affordances that are not explicit or revealed. This research, along with Tran's (2019) research into multimodal and non-traditional dissertation work, reveals that openly shared dissertation documents that set precedence and model the creation of seminal, original, and creative research works should be encouraged and celebrated. This dissertation is just such a document – revealed and shared in the open.

6.4 Limitations

In this section, I identify potential limitations emerging from the research design particularly in the study participation, the methodological suitability of P-IP and crystallization for solitary novice researchers, and limitations in the data collection and analysis from this research.

6.4.1 Study Participation

I acknowledge the generosity of the participants in this research who shared their lived experiences with MDL within their OEPr as TEds. One consideration of the time gifted by the study participants was the challenge of conducting the interviews during the latter part of an academic year, in the second year of pandemic impacted teaching and learning constraints. Participants shared their passion and interest in teaching, yet reveal many challenges and barriers in their efforts to infuse MDL into teaching and learning practices. These were further complicated and influenced by factors and constraints imposed by the COVID-19 pandemic.

Although a limited number of participant interviews were conducted, this in no way reduces the potential of the generated findings and analysis. Errors and omissions are mine because these resulted from moments when my focus shifted away from the phenomenon. Issues of bias or binary thinking occurred. A research approach that requires fluidity and impermanence by applying "blurry rather than rigid boundaries" (Cronin, 2017, p. 171) makes this MDL in OEPr research challenging.

It is possible that the narrow scope of participant criteria may render this research less clearly applicable to other contexts such as higher education in general or TEds in other FoE contexts. Some might argue that the limitation of data gathering methods to one interview and one artifact may limit the potential depth of the MDL that could be found in the OEPr of TEds, or the breadth of MDL that TEds may apply to their OEPr over time.

Although some might argue that the limited participation numbers in this research precludes the potential for generalizability or theory building, this was not the intended outcome

of this research. This lack of generalizability or theory building may impact the perceived benefits, but does not negate the importance of this research. My intention and hope is that this research opens new avenues of thought relative to MDL within the OEPr in faculties of education. There is potential for further study in broader categories, crossing boundaries between fields of study beyond the field of teacher education, in order to extend this conversation.

I understand that my research may be impacted by conceptions of the participants' self-efficacy (Bandura, 2012; Taimalu & Luik, 2019) and their pedagogical beliefs about the importance of MDL, or perceptions about OEPr. Although investigations into the use of technology among teacher educators (Taimalu & Luik, 2019) may lead to some understanding, teacher educators' perceptions and lived experiences of MDL within their OEPr may be influenced by their confidence in their abilities to create and model media and digital literacies (McDonagh et al., 2021), their perceived skills, fluencies, and competencies with MDL and OEPr, as well as their positive mindsets when using technologies within their teaching practice (Falloon, 2020).

Open educational resources and practices, created and share by experienced practitioners of the art and science of teaching, can potentially improve access to educationally focused media and networks, extend the adaptability of educational practices and resources, provide exemplars of rich digital artifacts of educational information, and lead to the transformation of faculties of education to collaborative and creative learning spaces (Couros, 2006). Since teacher educators' voices are currently absent from OEPr conversations and discourses, it is through this research that I "make public the knowledge and everyday lived experiences of the oppressed, the silenced, and the lost and forgotten in the service of social justice" (St. Pierre, 2013, p. 648).

6.4.2 Limitations in methodological suitability for solitary, novice researchers

One limitation for the application of crystallization as a methodology is that it can be a complex and sometimes chaotic approach that may complicate the efforts of a novice researcher working

in isolation. Ellingson (2009) identifies this limitation as: requiring "the capacity to be fluent in multiple genres and forms of analysis"; exploring the "trade-off between breadth and depth"; dealing with a "lack of recognition of crystallization as a viable methodological framework"; and, a willingness to adjust "beliefs about the rightness or correctness of any given method or genre" (p. 16-17). In reflection, as I navigate and make sense of the fluidity and instability in the materials, data, codes, concepts, contexts, histories, textualities, discourses, and experiences that constitute this doctoral research inquiry, I am all at once exhilarated and invigorated, but also confounded, frustrated, and confused (Ellingson, 2009; Snowden, 2011).

As a novice researcher, the challenge is knowing what to do, and then, what to do next. The limitations of this methodological approach can be mitigated by consistently stepping back to pause and reflect, requiring a strength of will and confidence in a scholarly self, which may not be the case for others in the early stages of their academic life. For me, this limitation was mitigated by my scholarly practice of openly blogging and sharing my thoughts throughout the doctoral program. This helped bridge the silent and gravid pauses in my research work. A similar practice for novice researchers in a solo endeavour of scholarly inquiry can attenuate the limitations of crystallization as a methodology. This is particularly true if seeking feedback from scholarly networks as a standard practice throughout the dissertation process.

The chaotic and complex nature of crystallization can be mitigated with the practice of hupomnemata (see glossary) (Weisgerber & Butler, 2016) and adopting Mitchell and Clark's (2021) four principles of writing as inquiry – listen for earworms, write stream of consciousness, data have plots, and interpretation is inescapable. Ellingson (2009) suggests that, rather than apologizing for the crystallization approach being partial and challenging, "scholars using crystallization can celebrate multiple points of view with a phenomenon across the methodological continuum" (p. 22).

6.4.3 Limitations in data generation and analysis

I recognize the limitation of the data gathering methods. Data gathering occurs over time, thus one limitation in the data gathering and analysis phases is to maintain a clear focus on the phenomenon (Vagle, 2018). Although my focus was on the multitude of data moments generated from this research, I was challenged when looking at the multiplicity of the moments rather than seeing the overall picture that was being generated. The intended focus for this P-IP research is on the *becoming* (becoming media and digitally literate, becoming an open educational practitioner) so I was alert to how this research may inadvertently lose focus and result in discovering what has been.

Data analysis in P-IP research, particularly when applying a crystallization methodology, is shaped by the researcher's positionality, perspectives, and biases. The data analysis and findings from this research should to be considered partial and selective. The generation of findings is a process occurring through the lens of the researcher and framed by the crystallizations created. My data analysis and findings focus on elements from within the stories and meaningful events, as well as the practices shared through the participants' lived experiences. These should be considered fragmented and timebound. It is possible that "those with different viewpoints or more significant research experience may interpret the data differently" (Paskevicius, 2017, pg. 171) and crystallize different findings than those shared here. My crystallizations may resonate with some elements of truth, yet I invite others to focus on other facets and dimensions to reveal new and different interpretations from these findings (Paskevicius, 2017).

6.5 Recommendations

"A teacher is a professional, one who must constantly seek to improve and to develop certain qualities or virtues which are not received but must be created. The capacity to renew ourselves every day is important." Paolo Freire (1985)

The goal of this research study was to generatively catalyze new ideas about the connections between MDL, OEPr, and teacher education. Yet, there is still more to explore.

Recommendations emerging from this research follow Freire's quoted provocation to seek improvement in TEds' qualities and virtues in MDL and OEPr through creation and renewal. My first recommendation emerging from this research is to refocus on open education as a goal, as a sustainable means of renewing professional practice. With a focus on OEPr, TEds can create ways and means to infuse MDL into FoE programs and increase awareness of the transformational potential of communication, connectivity, creativity, and criticality to promote future-ready teaching practices in faculties of education. Second, I make a recommendation for the application of P-IP as theoretical construct and methodology for subsequent research in open educational practices. Finally, I make some recommendations for other areas of future research.

6.5.1 Frame OEPr goals when infusing MDL

When MDL is infused into OEPr within FoE, a cultural transformational process can occur within teacher education programs, one that "requires time, appropriate pedagogical and technical support, as well as care for the educators own personal professional development pace" (Redecker, 2017, p. 108). This shift in practice requires not only encouragement and rewarding the efforts of TEds when they enact change in how MDL become infused within their practice, but alternatively providing mentoring and ongoing professional learning within open and global networks (DeWaard & Chavhan, 2022; Oddone, 2019). As echoed in the words of one participant, this is an opportunity to center the voices of teachers who are already doing this work since these are the voices who can drive what we've learned (Perseus, interview transcript).

Pangrazio (2016) suggests conceptions of critical digital literacy that overcome binary tensions that seek to constrain, often described within ideological vs personal, collective concerns vs individual practice, and/or technical mastery vs critical dispositions. As seen in this research, when framing OEPr goals within MDL practices, teacher educators offer a range and

continuum of opportunities and alternatives for visualization, critical self-reflection, re-articulation of digital concepts, and transcendental critique (Pangrazio, 2016). Nichols et al., (2021) adds to this notion when TEds "work to remake these systems, inserting flexible and responsive structures to better support the autonomy and flourishing of those impacted" (p. 349).

6.5.2 Considerations of P-IP for educational research

Expanding the application of post intentional phenomenological methodology as part of an open dissertation in open educational research in teacher education calls researchers to be deep, critical and variational (Ihde, 2012). Those who answer the call to pursue phenomenological research "in the name *of professional practice* seek to gain insights into the meaningfulness of human experiences and contribute to more thoughtful practice" (Van Manen, 2020, p. 489, emphasis in original). Since this research is conducted from a researcher and practitioner in the field of teacher education, I seek to be "*other-oriented* to reflect and wonder what lifeworlds may be like for the individuals", other TEds who are immersed in similar spaces. I heed van Manen's (2020) call and responsibility to "look beyond our "selves" to the worlds of others, the others we serve" (pg. 490). Applying additional P-IP research to teacher education is an important methodology when seeking to understand the phenomenon of teacher education from the perspective and lived experiences of teacher educators. P-IP can be applied to explore MDL and OEPr skills, fluencies, competencies, and literacies to build understanding and perspective, stepping towards fostering a "culture within which higher education uses of data are ethical, legible, and transparent" (Stewart & Lyons, 2021, p. 66).

6.5.3 Relevant research areas

I propose considerations for further research that may be catalyzed by this PhD research. I recognize the need for additional research into the application of crystallization and P-IP since these methodologies for research into MDL and OEPr may be novel approaches for other researchers in these fields. Although these methodologies may challenge novice researchers,

there is benefit in learning within and among the participants' stories – within the messiness and complexity of research, as part of the practice of 'becoming' an open researcher.

The focus on TEds in this research shifts the research lens away from the potential benefits on student learning or the transferability of learning, particularly where TEds apply MDL in their OEPr. Refocusing on student learning within the FoE, as a reflection of the models provided by TEds, would benefit from investigation. Paskevicius points to the challenge "in measuring how and if OEP impacts student learning and in what way faculty evolve their practices over time to engage learners with OEP" (Paskevicius, 2018, p. 172). Researching the impact on students when TEds infuse MDL within OEPr could further determine how TEds, as well as other higher education instructors and learning designers, might engage with MDL as a means of supporting authentic student learning (DeWaard & Roberts, 2021; Oddone 2019).

Research inquiry in the area of MDL and OEPr would benefit from a focus on the impact of artificial intelligence technologies and algorithmic learning on the authentic media and digital productions being generated in teacher education since generative text-to-text, text-to-image, text-to-video, and text-to-sound technologies show potential to reconfigure relationships with/through technologies (Bozkurt et al., 2023). Although research into the impacts of AI are speculative, emergent, and rapidly released, there is some suggestion that AI in education "could lead to students being more empowered, engaged, and motivated" (Bozkurt et al., 2023, paragraph 5). Narrowing the research to focus on the MDL and OEPr of TEds may lead to further insights into how AI potentially transforms teaching and learning.

Finally, an area of inquiry that addresses current efforts to explore questions relating to the impacts of MDL and OEPr on issues of Indigeneity, diversity, inclusion, equity, and accessibility practices in teacher education. Nichols Smith et al., (2021) recommend research and praxis into how platform architectures can undermine efforts to address marginalization and decolonization. Research and practical models can attune educators to "places critical literacy

can best contribute in a world increasingly mediated by data technologies" and draw from distributed and diverse systems and coalitions to critique, resist, reimagine, and transform platform ecologies (Nichols Smith et al., 2021 p. 351) that benefit all students.

6.6 Crystallizing Some Final Thoughts

" *For last year's words belong to last year's language. And next year's words await another voice. And to make an end is to make a beginning"* (T. S. Elliot, 1942, p. 23).

In this research, I focus on the lived experiences of teacher educators in Canadian faculties of education in an effort to clarify facets of their media and digital literacies that impact their open educational practices. As the T. S. Elliot quote reminds me, this ending is but the beginning, where the words and stories shared by the participants are becoming new stories. In unique ways the stories shared in this research are shaped by my focus on facets and dimensions found in the generated findings. In other ways, these stories share a moment out of time. New stories by the participants in this research are already being written.

In the literature review section I explore theoretical and conceptual foundations to teacher education, media and digital literacies, open educational practices, and phenomenology. In the research design section I share the application of post-intentional phenomenology and crystallization methodology to my research. I reveal details of the methods including participant selection, timelines, interview procedures, and data gathering strategies. In the findings, I hold up facets of the stories shared by the participants and in the discussion section I re-examine the findings through selected lenses and dimensions of MDL frameworks. In this conclusion I draw upon the previous sections to present implications of this research, limitations to consider, and the potential for future research emerging from this work.

Lived experiences are storied and as stories do, they contain heroes and protagonists. These stories include sites of struggle, loss of innocence, a heroic quest, companions along the

way, trials and tribulation, with insight and transformations along the routes taken toward resolution (Brown & Moffett, 1999).The lived experiences of the participants in this research are no less heroic for their efforts to bring media and digitally enabled educational practices into the open. It is through these efforts to communicate, connect, teach creatively, and enact criticality that MDL are *becoming* evident in the OEPr of TEds in Canadian FoE and beyond. The global push for OEPr and the importance of MDL are increasingly emphasized (UNESCO, 2018, 2019b, 2023). Within teacher education, as evident in the lived experiences of the participants, awareness of OEPr is key, re-visioning is essential, and re-imagining futures have yet to emerge.

Although some may advocate for separation of media from digital, I petition for a combinatorial view of MDL as a wholistic response to what is a complex and often chaotic concept. By sharing these lived experiences, as captured within the gyroscopic navigational imagine crafted from the findings (see Figure 22), the individual facets and dimensions come into focus, thus enhancing understanding that complexity surrounds each individual's practice of teaching in the open. The participants' lived experiences with MDL in their OEPr is shaped by a "base level of digital competence, defined as the confident, critical and responsible use of, and engagement with, digital technologies for learning, at work, and for participation in society" (Redecker, 2017, p. 107). What has become clearer through this research is the continuum(s) along which participants dial up or dial down their focus on specific facets of MDL as they design student learning and engage in scholarship as open educators (see Figure 8). The participants actively negotiate elements of knowledge production and dissemination, for themselves and their students, in order to "become consciously inclusive, socially and culturally diverse, interdisciplinary and inter-professional, and are able to foster communication, collaboration, ownership and mutual learning" (UNESCO, 2021, p. 127).

I suggest that although the findings and discussion do not reveal anything dramatically new in terms of media or digital literacies for teaching and learning in a faculty of education, this

research presents an opportunity to refocus from the wide range of foundational frameworks for MDL that are globally available. It is also an opportunity to redefine literacies as this concept spirals from media and digital skills, fluencies and competencies (see Figure 10). What is revealed in this research is a broader understanding of the social and constructive nature of MDL and OEPr within FoE, when TEds practice from mindsets of media and digitally enable communications, connections, creativity and criticality. The transitory, destabilizing, and emergent nature of MDL within an OEPr, particularly as it responds to changes in the field of teacher education, can be chaotic and complex. Suggesting the use of a navigational device such as a gyroscope as a metaphor for lived experiences of MDL in OEPr can help TEds in FoE keep their eye on the horizon, maintain some balance in their practice, and manage the complexities of the work being done.

One solution to this complexity is the open sharing of collaborative approaches to teaching and learning. Since "openness has certainly made teaching and learning resources and practices more accessible and reusable, and those affordances have encouraged the sharing and reflection of practice among communities" (Paskevecius, 2018, p. 170) it is increasingly more important for TEds to share with/in cross-disciplinary fields in all higher education contexts around the world.

Media and digital literacies are an ideal, as I suggest in the Spirals to Literacies graphic (see Figure 10), as an unobtainable condition characterized by liminality, fluidity, partiality, and liveliness. Yet it is toward such an ideal we must all strive in today's modern, technologically enabled world. It is through this quest for literacies, as we journey toward becoming literate in aspects of media and digital technologies, that we acquire skills, fluencies, and competencies that can be measured and achieved, thresholds over which we can cross to demonstrate proficiency. Although many frameworks suggest literacies are attainable, the acquisition of MDL is not a

threshold event; it is determined by cognitive and contextual factors. This research reveals how MDL and OEPr are co-dependent and reciprocal in process, production, and presentations. As evidenced in this research, it is via the purpose and passion of the teacher educators working toward an ethos of openness in their educational practice (OEPr) through which the vision and acquisition of media and digital literacies can become world-making.

References

Adkins, B. (2015). *Deleuze and Guattari's a thousand plateaus: A critical introduction and guide*. Edinburgh University Press Ltd.

Aguaded, I., & Delgado-Ponce, A. (2019). Educommunication. In R. Hobbs, P. Mihailidis, G. Cappello, M. Ranieri, & B. Thevenin (Eds.), *The international encyclopedia of media literacy* (pp. 1–6). John Wiley & Sons, Ltd. https://doi.org/10.1002/9781118978238.ieml0061

Albion, P., Jones, D., Campbell, C., & Jones, J. (2017). Open educational practice and preservice teacher education: Understanding past practice and future possibilities. In P. Resta & S. Smith (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference*. Association for the Advancement of Computing in Education (AACE). https://www.learntechlib.org/primary/p/177356/

Alevizou, G. (2015). From OER to MOOCs: Critical perspectives on the historical mediation trajectories of open education. *International Journal of Media & Cultural Politics*, *11*(2), 203–224.

Allen, J. V., & Katz, S. (2019). Developing open practices in teacher education: An Example of Integrating OER and developing renewable assignments. *Open Praxis*, *11*(3), 311–319. https://doi.org/10.5944/openpraxis.11.3.972

Allen, J. V., & Katz, S. (2023). Viewing open education within the technological, pedagogical, content framework: Illustrating educator knowledge, skills and dispositions. *Research in Learning Technology*, *31*. https://doi.org/10.25304/rlt.v31.2829

Ally, M. (2019). Competency profile of the digital and online teacher in future education. *The International Review of Research in Open and Distributed Learning*, *20*(2). https://doi.org/10.19173/irrodl.v20i2.4206

Aparici, R., & García-Marín, D. (2018). Prosumers and emirecs: Analysis of two confronted theories. *Comunicar*, *26*(55), 71–79. https://doi.org/10.3916/C55-2018-07

Arendt, H. (1998). *The human condition* (2nd ed.). University of Chicago Press. https://monoskop.org/images/e/e2/Arendt_Hannah_The_Human_Condition_2nd_1998.pdf

Armellini, A., & Nie, M. (2013). Open educational practices for curriculum enhancement. *Open Learning*, *28*(1), 7–20. https://doi.org/10.1080/02680513.2013.796286

Association for Media Literacy (AML). (2022). *About*. Association for Media Literacy. https://aml.ca/

Association of Canadian Deans of Education. (2017). *Accord on teacher education*. CSSE. https://csse-scee.ca/acde/wp-content/uploads/sites/7/2018/05/Accord-on-Teacher-Education.pdf

Atenas, J., Havemann, L., Timmerman, C., & Kuhn, C. (2021, April 11). *Understanding critical data literacy beyond data skills*. GO-GN webinar. https://go-gn.net/seminar/understanding-critical-data-literacy-beyond-data-skills-workshop/

Baker, F. (2016). *Media literacy in the K-12 classroom* (2nd ed.). International Society for Technology in Education.

Bakhtin, M. M. (1981). Discourse in the novel. In M. Holquist (Ed.), & C. Emerson & M. Holquist (Trans.), *The dialogic imagination: Four essays by M. M. Bahktin* (pp. 259–422). University of Texas Press. https://hdl-handle-net.ledproxy2.uwindsor.ca/2027/heb.09354

Bali, M., & Caines, A. (2018). A call for promoting ownership, equity, and agency in faculty development via connected learning. *International Journal of Educational Technology in Higher Education*, *15*(1). https://doi.org/10.1186/s41239-018-0128-8

Bali, M., Caines, A., Hogue, R., DeWaard, H., & Friedrich, C. (2019). Intentionally equitable hospitality in hybrid video dialogue: The context of virtually connecting. *ELearn Magazine*. https://elearnmag.acm.org/archive.cfm?aid=3331173

Bali, M., Cronin, C., & Jhangiani, R. S. (2020). Framing open educational practices from a social justice perspective. *Journal of Interactive Media in Education*, *2020*(1), 10. https://doi.org/10.5334/jime.565

Bali, M., & Zamora, M. (2022). The equity-care matrix: Theory and practice. *Italian Journal of Educational Technology*, *30*(1). https://doi.org/10.17471/2499-4324/1241

Bandura, A. (2012). On the functional properties of perceived self-efficacy revisited. *Journal of Management*, *38*(1), 9–44. https://doi.org/10.1177/0149206311410606

Banner, J. M., & Cannon, H. C. (2017). *The elements of teaching* (2nd ed.). Yale University Press.

Barbas, A. (2020). Educommunication for social change. In H. Stephansen & E. Treré (Eds.), *Citizen media and practice: Currents, connections, challenges* (pp. 73–88). Routledge.

Barrett, M. J. (2014). Responding to environmental crises through multi-media hypertextual research representation. In M. A. Peters, E. P. Hart, & A. Reid (Eds.), *A companion to research in education* (pp. 569–574). Springer.

Bates, T. (2019, May 30). *The coming crisis in Canadian post-secondary education: Some strategies for survival*. Contact North: Online Learning and Distance Education Resources. https://www.tonybates.ca/2019/05/30/the-coming-crisis-in-canadian-post-secondary-education-3-some-strategies-for-survival/

Bayne, S., Knox, J., & Ross, J. (2015). Open education: The need for a critical approach. *Learning, Media and Technology*, *40*(3), 247–250. https://doi.org/10.1080/17439884.2015.1065272

BC Teachers' Council. (2019). *Professional standards for BC educators*. https://www2.gov.bc.ca/assets/gov/education/kindergarten-to-grade-12/teach/teacher-regulation/standards-for-educators/edu_standards.pdf

Beck, C. (2016). Rethinking teacher education programs. In C. Kosnik, S. White, C. Beck, B. Marshall, A. L. Goodwin, & J. Murray (Eds.), *Building bridges: Rethinking literacy teacher education in a digital era* (pp. 193–205). Sense Publishing.

Beetham, H., Falconer, I., McGill, L., & Littlejohn, A. (2012). *Open practices: Briefing paper* [Wiki]. https://oersynth.pbworks.com/w/page/51668352/OpenPracticesBriefing

Belshaw, D. (2011). *What is digital literacy?* [Ed.D., Durham University]. https://dmlcentral.net/wp-content/uploads/files/doug-belshaw-edd-thesis-final.pdf

Belshaw, D. (2012, July 12). On the important differences between literacies, skills and competencies. *Open Educational Thinkering*. https://dougbelshaw.com/blog/2012/07/12/on-the-important-differences-between-literacies-skills-and-competencies/

Bennet, D., & Bennet, A. (2008). The depth of knowledge: Surface, shallow or deep? *Vine*, *38*(4), 405–420. https://doi.org/10.1108/03055720810917679

Biesta, G. (2022). *World-centred education: A view for the present*. Routledge.

Biesta, G., Priestley, M., & Robinson, S. (2015). The role of beliefs in teacher agency. *Teachers and Teaching*, *21*(6), 624–640. https://doi.org/10.1080/13540602.2015.1044325

Blok, A., Farías, I., & Roberts, C. (Eds.). (2019). *The Routledge companion to actor-network theory* (1st ed.). Routledge. https://doi.org/10.4324/9781315111667

Blomgren, C. (2018). OER awareness and use: The affinity between higher education and K-12. *International Review of Research in Open and Distributed Learning*, *19*(2).

Borenstein, J., & Howard, A. (2021). Emerging challenges in AI and the need for AI ethics education. *AI and Ethics*, *1*(1), 61–65. https://doi.org/10.1007/s43681-020-00002-7

Bossu, C., & Stagg, A. (2018). The potential role of open educational practice policy in transforming Australian higher education. *Open Praxis*, *10*(2), 145–157.

boyd, d. (2010). Social network sites as networked publics: Affordances, dynamics, and implications. In Z. Papacharissi (Ed.), *Self: Identity, community, and culture on social network sites.* (pp. 39–58). Routledge.

Bozkurt, A., Gjelsvik, T., Adam, T., Asino, T. I., Atenas, J., Bali, M., Blomgren, C., Bond, M., Bonk, C. J., Brown, M., Burgos, D., Conrad, D., Costello, E., Cronin, C., Czerniewicz, L., Deepwell, M., Deimann, M., DeWaard, H. J., Dousay, T. A., … Zawacki-Richter, O. (2023). *Openness in education as a praxis: From individual testimonials to collective voices*. *15*(2), 76–112. https://doi.org/10.55982/openpraxis.15.2.574

Bozkurt, A., Koseoglu, S., & Singh, L. (2019). An analysis of peer reviewed publications on openness in education in half a century: Trends and patterns in the open hemisphere. *Australasian Journal of Educational Technology*, *35*(4). https://ajet.org.au/index.php/AJET/article/view/4252/1564

Bozkurt, A., Xiao, J., Lambert, S., Pazurek, A., Crompton, H., Koseoglu, S., Farrow, R., Bond, M., Nerantzi, C., Honeychurch, S., Bali, M., Dron, J., Mir, K., Stewart, B., Costello, E., Mason, J., Stracke, C. M., Romero-Hall, E., Koutropoulos, A., … Jandrić, P. (2023). Speculative futures on ChatGPT and generative artificial intelligence (AI): A collective reflection from the educational landscape. *Asian Journal of Distance Education*, *18*(1). http://www.asianjde.com/ojs/index.php/AsianJDE/article/view/709

Brassard, L., Mueller, J., Archer, K., & Spencer-Mueller, E. K. (2021). Learning to teach global competencies in a transforming digital world: A national examination and case study. In H. K. Dhir (Ed.), *Advances in educational technologies and instructional design* (pp. 37–64). IGI Global. https://doi.org/10.4018/978-1-7998-6967-2.ch003

Braun, V., & Clarke, V. (2021). To saturate or not to saturate? Questioning data saturation as a useful concept for thematic analysis and sample-size rationales. *Qualitative Research in Sport, Exercise and Health*, *13*(2), 201–216. https://doi.org/10.1080/2159676X.2019.1704846

Braun, V., & Clarke, V. (2022). *Thematic analysis: A practical guide* (1st ed.). Sage.

Brown, B., Jacobsen, M., Roberts, V., Hurrell, C., Neutzling, N., & Travers-Hayward, M. (2022). Open educational practices create conditions for developing research skills in graduate education. In M. Jabobsen & C. Smith (Eds.), *Online learning and teaching from kindergarten to graduate school* (pp. 457–483). Canadian Association for Teacher Education. http://dx.doi.org/10.11575/PRISM/40509

Brown, J. L., & Moffett, C. A. (1999). *The hero's journey: How educators can transform schools and improve learning*. ASCD Association for Supervision and Curriculum Development.

Buckingham, D. (2020). Epilogue: Rethinking digital literacy: Media education in the age of digital capitalism. *Digital Education Review*, *37*, 230–239.

Burkitt, E. (2006). Vygotsky's sociocultural theory. In G. Davey (Ed.), *Encyclopaedic dictionary of psychology*. Routledge.

Burrell, J. (2009). The field site as a network: A strategy for locating ethnographic research. *Field Methods*, *21*(2), 181–199. https://doi.org/10.1177/1525822X08329699

Buss, R. R., Foulger, T. S., Wetzel, K., & Lindsey, L. (2018). Preparing teachers to integrate technology into K–12 instruction II: Examining the effects of technology-infused methods courses and student teaching. *Journal of Digital Learning in Teacher Education*, *34*(3), 134–150. https://doi.org/10.1080/21532974.2018.1437852

C21. (2012). *Shifting minds: A 21st century vision of public education for Canada*. Canadians for 21st Century Innovation and Learning. https://www.c21canada.org/wp-content/uploads/2012/05/C21-Canada-Shifting-Version-2.0.pdf

Caliandro, A., & Gandini, A. (2017). *Qualitative research in digital environments: A research toolkit*. Routledge, Taylor & Francis Group.

Calvino, I. (1979). *A winter's night a traveler*. Harcourt Brace Jovanovich. https://literariness.org/wp-content/uploads/2019/07/Calvino-Italo-If-on-a-winters-night-a-traveler.pdf

Cam, E., & Kiyici, M. (2017). Perceptions of prospective teachers on digital literacy. *Malaysian Online Journal of Educational Technology*, *5*(4), 29–44.

Canada's Open Education Initiatives. (n.d.). *BCCampus OpenEd*. Retrieved July 8, 2021, from https://open.bccampus.ca/what-is-open-education/canadas-open-education-initiatives/

Cannon, S. O. (2018). Teasing transcription: Iterations in the liminal space between voice and text. *Qualitative Inquiry*, *24*(8), 571–582. https://doi.org/10.1177/1077800417742412

Cantabrana, J. L., Usart Rodríguez, M., & Gisbert Cervera, M. (2019). Assessing teacher digital competence: The construction of an instrument for measuring the knowledge of pre-service teachers. *Journal of New Approaches in Educational Research*, *8*(1), 73–78. https://doi.org/10.7821/naer.2019.1.370

Cape Town open education declaration: Unlocking the promise of open educational resources=. (2007). The Cape Town Open Education Declaration. https://www.capetowndeclaration.org/read-the-declaration

Carretero Gomez, S., Vuorikari, R., & Punie, Y. (2017). *DigComp 2.1: The digital competence framework for citizens with eight proficiency levels and examples of use* (EUR 28558 EN). Publications Office of the European Union. https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-

reports/digcomp-21-digital-competence-framework-citizens-eight-proficiency-levels-and-examples-use

Carter, S., & Little, M. (2007). Justifying knowledge, justifying method, taking action: Epistemologies, methodologies, and methods in qualitative research. *Qualitative Health Research*, *17*(10), 1316–1328. https://doi.org/doi: 10.1177/1049732307306927

Castañeda, L., & Selwyn, N. (2018). More than tools? Making sense of the ongoing digitizations of higher education. *International Journal of Educational Technology in Higher Education*, *15*(1). https://doi.org/10.1186/s41239-018-0109-y

Castaño Muñoz, J., Vuorikari, R., Costa, P., Hippe, R., & Kampylis, P. (2023). Teacher collaboration and students' digital competence—Evidence from the SELFIE tool. *European Journal of Teacher Education*, *46*(3), 476–497. https://doi.org/10.1080/02619768.2021.1938535

Cervetti, G., Damico, J., & Pearson, P. D. (2006). Multiple literacies, new literacies, and teacher education. *Theory Into Practice*, *45*(4), 378–386.

Chen, X., Xie, H., & Hwang, G.-J. (2020). A multi-perspective study on Artificial Intelligence in education: Grants, conferences, journals, software tools, institutions, and researchers. *Computers and Education: Artificial Intelligence*, *1*, 100005. https://doi.org/10.1016/j.caeai.2020.100005

Chiappe, A., Amado, N., & Leguizamón, L. (2020). Educommunication in digital environments: An interaction´s perspective inside and beyond the classroom. *Innoeduca. International Journal of Technology and Educational Innovation*, *6*(1), 34–41. https://doi.org/10.24310/innoeduca.2020.v6i1.4959

Chickering, A., & Gamson, Z. (1987). Seven principles for good practice in undergraduate education. *American Association of Higher Education Bulletin*. https://files.eric.ed.gov/fulltext/ED282491.pdf

Choi, M., Cristol, D., & Gimbert, B. (2018). Teachers as digital citizens: The influence of individual backgrounds, internet use and psychological characteristics on teachers' levels of digital citizenship. *Computers & Education*, *121*, 143–161.

CICAN. (2020). *SDG Toolkit for Canadian Colleges and Institutes*. https://sdgcicanguide.pressbooks.com/

Cilesiz, S. (2011). A phenomenological approach to experiences with technology: Current state, promise, and future directions for research. *Educational Technology Research & Development*, *59*(4), 487–510.

Clandinin, D. J. (2015). Stories to live by on the professional knowledge landscape. *Waikato Journal of Education*, *Special 20th Edition Anniversary Collection*, 183–193.

Clifden, J., & Vagle, M. (2020). Walking into the posts. In E. Creely, J. Southcott, K. Carabott, & D. Lyons (Eds.), *Phenomenological inquiry in education: Theories, practices, provocations and directions* (1st ed.). Routledge. https://doi.org/10.4324/9780429285646

CMEC. (2020a). *Pan-Canadian systems-level framework on global competencies*. Council of Ministers of Education, Canada. https://www.cmec.ca/Publications/Lists/Publications/Attachments/403/Pan-Canadian%20Systems-Level%20Framework%20on%20Global%20Competencies_EN.pdf

Cochran-Smith, M. (2005). Teacher educators as researchers: Multiple perspectives. *Teaching and Teacher Education*, *21*(2), 219–225. https://doi.org/10.1016/j.tate.2004.12.003

Collier, D. R. (2018). Doodling, borrowing, and remixing: Students inquiring across digitized spaces. *The Reading Teacher*, *72*(1), 125–130. https://doi.org/doi:10.1002/trtr.1717

Collins, A., Seely Brown, J., & Newman, S. E. (1989). Cognitive apprenticeship: Teaching the crafts of reading, writing, and mathematics. In L. B. Resnick (Ed.), *Knowing, learning,*

and instruction: Essays in honor of Robert Glaser (pp. 453–494). Lawrence Erlbaum Associates, Inc.

Connelly, F. M., Clandinin, D. J., & Ming, F. H. (1997). Teachers' personal practical knowledge on the professional knowledge landscape. *Teaching and Teacher Education*, *13*(7), 665–674. https://doi.org/10.1016/S0742-051X(97)00014-0

Contact North. (2023, January 5). *Ten Facts About ChatGPT*. Teach Online. https://teachonline.ca/tools-trends/ten-facts-about-chatgpt

Couros, A. (2006). *Examining the open movement: Possibilities and implications for education* [Dissertation, University of Regina]. http://educationaltechnology.ca/publication_files/research/Dissertation-Couros-FINAL-06-WebVersion.pdf

Couros, A. (2010). Developing personal learning networks for open and social learning. In G. Veletsianos (Ed.), *Emerging technologies in distance education* (pp. 109–127). Athabasca University Press.

Couros, A., & Hildebrandt, K. (2016). Designing for open and social learning. In G. Veletsianos (Ed.), *Emergence and innovation in digital learning: Foundations and applications*. Athabasca University Press. http://www.aupress.ca/books/120258/ebook/09_Veletsianos_2016-Emergence_and_Innovation_in_Digital_Learning.pdf

Crawley, J. (2018). "Mapping backward" and "looking forward" by the 'invisible educators'—Reimaging research seeking "common features of effective teacher preparation." *Research in Post-Compulsory Education*, *23*(1), 23–34. https://doi.org/10.1080/13596748.2018.1420684

Creely, E., Southcott, J., Carabott, K., & Lyons, D. (Eds.). (2020). *Phenomenological inquiry in education* (Vol. 1st). Routledge. https://tinyurl.com/yheb8yjm

Cresswell, J. W., & Guetterman, T. C. (2019). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research*. Pearson Education Inc.

Cronin, C. (2018). *Openness and praxis: A situated study of academic staff meaning-making and decision-making with respect to openness and use of open educational practices in higher education* [PhD Thesis, NUI Galway]. https://aran.library.nuigalway.ie/handle/10379/7276

Cronin, C. (2017). Openness and praxis: Exploring the use of open educational practices in higher education. *International Review of Research in Open and Distributed Learning*, *18*(5). http://www.irrodl.org/index.php/irrodl/article/view/3096/4301

Cronin, C. (2016). *OER16: A critical turn – Catherine Cronin*. https://catherinecronin.net/conferences/thoughts-on-oer16/

Cronin, C., & MacLaren, I. (2018). Conceptualising OEP: A review of theoretical and empirical literature in Open Educational Practices. *Open Praxis*, *10*(2), 127–143.

Cummins, E., & Early, M. (2010). *Identity texts: The collaborative creation of power in multilingual schools*. Trentham Books. https://eric.ed.gov/?id=ED511425

Danesi, M. (2000). *Encyclopedic dictionary of semiotics, media, and communications.* University of Toronto Press.

Danyluk, P., Burns, A., Hill, S. L., & Crawford, K. (2022). *Crisis and opportunity: How Canadian Bachelor of Education programs responded to the pandemic*. Canadian Association for Teacher Education (CATE). https://doi.org/10.11575/PRISM/39534

Daviet, B. (2016). *Revisiting the principle of education as a public good* (ED-2016/WP/1). UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000245306

Definition of PDF. (n.d.). PCMAG. Retrieved June 21, 2023, from https://www.pcmag.com/encyclopedia/term/pdf

Definition of PNG. (n.d.). PCMAG. Retrieved June 21, 2023, from https://www.pcmag.com/encyclopedia/term/png

Definition of URL. (n.d.). PCMAG. Retrieved June 21, 2023, from https://www.pcmag.com/encyclopedia/term/url

Definition of USB. (n.d.). PCMAG. Retrieved June 21, 2023, from https://www.pcmag.com/encyclopedia/term/usb

Denzin, N. K. (2017). Critical qualitative inquiry. *Qualitative Inquiry*, *23*(1), 8–16. https://doi.org/10.1177/1077800416681864

Denzin, N. K., & Lincoln, Y. S. (2005). *The Sage handbook of qualitative research* (3rd Edition). Sage.

Denzin, N. K., & Lincoln, Y. S. (Eds.). (2011). *The SAGE handbook of qualitative research* (4th ed.). Sage Publications Inc.

Denzin, N. K., & Lincoln, Y. S. (Eds.). (2013). *Collecting and interpreting qualitative materials* (4th ed.). SAGE Publishing Inc.

DeVries, R. (2008). Piaget and Vygotsky: Theory and Practice in Early Education. In *21st century education: A reference handbook* (pp. 184–193). SAGE Publications, Inc. https://doi.org/10.4135/9781412964012.n20

DeWaard, H. (2020). Teaching, learning, literacy in our high-risk high-tech world: A framework for becoming human, 2017. By J. P. Gee. Teachers College Press. 184 pages. ISBN 978-0-8077-5860-1. *Canadian Journal of Learning and Technology / La Revue Canadienne de l'apprentissage et de La Technologie*, *46*(1). https://doi.org/10.21432/cjlt27939

DeWaard, H. (2021). Book review: Media education in Latin America. *Journal of Media Literacy Education*, *13*(3), 163–165. https://doi.org/10.23860/JMLE-2021-13-3-18

DeWaard, H. (2022). Letting the light shine in: A tapestry of digital literacies in Canadian faculties of education. In L. Tomczyk & L. Fedeli (Eds.), *Digital Literacy for Teachers*. Springer Nature. https://link.springer.com/chapter/10.1007/978-981-19-1738-7_8

DeWaard, H. (2023). Finding educommunication: In search of praxis in Canadian educologies. In S. Gennaro, N. Higdon, & M. Hoechsmann (Eds.), *Transformative practice in critical media literacy: Radical democracy and decolonized pedagogy in higher education*. Routledge.

DeWaard, H., & Chavhan, R. (2022). Cross-cultural mentoring in tertiary education: Enhancing self-efficacy through collaboration and openness in professional learning. In D. Forbes & R. Walker (Eds.), *Learning to teach online: Continuing professional learning and development for tertiary teachers* (pp. 57–69). Springer. 10.1007/978-981-19-5587-7_5

DeWaard, H., & Hoechsmann, M. (2021). Landscape and terrain of digital literacy policy and practice: Canada in the twenty-first century. In D. Frau-Meigs, S. Kotilainen, M. Pathak-Shelat, M. Hoechsmann, & S. R. Poyntz (Eds.), *Handbook on media education research: Contributions from an evolving field* (pp. 363–371). John Wiley & Sons, Inc. https://onlinelibrary.wiley.com/doi/10.1002/9781119166900.ch34

DeWaard, H., & Roberts, V. (2021). Revisioning the potential of Freire's principles of assessment: Influences on the art of assessment in open and online learning through blogging. *Distance Education*, *42*(2), 310–326. https://doi.org/https://doi.org/10.1080/01587919.2021.1910494

Dewey, J. (1910). *How we think*. D. C. Heath & Co. Publishers. https://www.gutenberg.org/files/37423/37423-h/37423-h.htm

Dewey, J. (1916). Chapter 7: The democratic conception in education. In *Democracy and Education* (pp. 85–104). Penn State. http://xroads.virginia.edu/~Hyper2/Dewey/ch07.html

Dixon, D. (2014a). *Endless question: Youth becomings and the anti-crisis of kids in global Japan* [PhD dissertation, Duke University]. https://dukespace.lib.duke.edu/dspace/handle/10161/8797

Dixon, D. (2014b). *Endless questions: How to think while playing*. Endless Question: Youth Becomings and the Anti-Crisis of Kids in Global Japan. http://scalar.usc.edu/students/endlessquestion/index

DQ institute. (2021). What is the DQ framework? Global standards for digital literacy, skills, and readiness. *DQ Institute Global Standards for Digital Intelligence*. https://www.dqinstitute.org/global-standards/

Ehlers, U.-D. (2011). Extending the territory: From open educational resources to open educational practices. *Journal of Open, Flexible, and Distance Learning*, *15*(2), 1–10.

Eisner, E. W. (2017). *The enlightened eye: Qualitative inquiry and the enchantment of educational practice* (2nd ed.). Teachers College Press.

Eisner, E. W. (2002). From episteme to phronesis to artistry in the study and improvement of teaching. *Teaching and Teacher Education*, *18*(4), 375–385. https://doi.org/10.1016/S0742-051X(02)00004-5

Ellingson, L. L. (2009). *Engaging crystallization in qualitative research: An introduction*. Sage Publications Inc.

Ellingson, L. L. (2013). Analysis and representation across the continuum. In N. K. Denzin & Y. S. Lincoln (Eds.), *Collecting and interpreting qualitative materials* (4th ed.). Sage Publications Inc.

Ellingson, L. L. (2014). "The truth must dazzle gradually": Enriching relationship research using a crystallization framework. *Journal of Social and Personal Relationships*, *31*(4), 442–450. https://doi.org/10.1177/0265407514523553

Ellingson, L. L. (2017). Authoring: Telling a research story. In M. Allen (Ed.), *The Sage encyclopedia of communication research methods* (pp. 66–69). Sage Publications, Inc. http://dx.doi.org/10.4135/9781483381411.n27

Ellingson, L. L., & Sotirin, P. (2020). *Making data in qualitative research: Engagements, ethics, and entanglements* (1st ed.). Routledge.

Ellis, V., & McNicholl, J. (2015). *Transforming teacher education: Reconfiguring the academic work*. Bloomsbury Publishing Plc.

Falloon, G. (2020). From digital literacy to digital competence: The teacher digital competency (TDC) framework. *Educational Technology Research and Development*, *68*(5), 2449–2472. https://doi.org/10.1007/s11423-020-09767-4

Farrow, R. (2016a). A Framework for the ethics of open education. *Open Praxis*, *8*(2). https://doi.org/10.5944/openpraxis.8.2.291

Farrow, R. (2016b). Constellations of openness. In M. Deimann & M. Peters (Eds.), *The philosophy and theory of open education*. Peter Lang Publishing.

Farrow, R. (2017). Open education and critical pedagogy. *Learning, Media & Technology*, *42*(2), 130–146. http://www.tandfonline.com/doi/full/10.1080/17439884.2016.11139 91.

Farrow, R., Cardoso, P., Chtena, N., Cox, G., Czerwonogora, A., DeWaard, H., Iniesto, P., Kuhn, C., Peramunugamage, A., Pitt, R., Vladimirschi, V., & Weller, M. (2021). GO-GN Research Review (Winter 2021). In *GO-GN Research Review (Winter 2021)*. Global OER Graduate Network. https://go-gn.net/gogn_outputs/research-review-winter-2021/

Federman, M. (2004, July 23). *What is the meaning of the medium is the message?* The McLuhan Program in Culture and Technology. http://individual.utoronto.ca/markfederman/article_mediumisthemessage.htm

Forkosh-Baruch, A., & Avidov-Ungar, O. (2019). ICT implementation in colleges of education: A framework for teacher educators. *Journal of Information Technology Education: Research*, *18*, 207–229. https://doi.org/10.28945/4312

Foucault, M. (1988). *Technologies of the self*. https://foucault.info/documents/foucault.technologiesOfSelf.en/

Foulger, T. S., Graziano, K. J., Schmidt-Crawford, D., & Slykhuis, D. A. (2017). Teacher educator technology competencies. *Journal of Technology and Teacher Education*, *25*(4), 413–448.

franzke, a. s., Bechmann, A., Zimmer, M., & Ess, C. (2020). *Internet research: Ethical guidelines 3.0*. Association of Internet Researchers. https://aoir.org/reports/ethics3.pdf

Frau-Meigs, D. (2017). Media and information literacy (MIL). In H. Tumber & S. R. Waisbord (Eds.), *The Routledge companion to media and human rights*. Routledge. https://doi.org/10.4324/9781315619835

Freire, P. (2018). *Pedagogy of the oppressed*. Bloomsburg (Original work published in 1970).

Freitas, J. V. de, & Ferreira, F. N. (2020). Socioenvironmental educommunication as a pedagogical strategy in early childhood education. *Educação & Formação (Fortaleza)*, 54–72. https://doi.org/10.25053/redufor.v5i14mai/ago.1449in

Gallagher, M., Breines, M., & Blaney, M. (2021). Ontological transparency, (In)visibility, and hidden curricula: Critical pedagogy amidst contentious edtech. *Postdigital Science and Education*, *3*(2), 425–443. https://doi.org/10.1007/s42438-020-00198-1

Gallagher, T., & Rowsell, J. (2017). Untangling binaries: Where Canada sits in the "21st century debate." *McGill Journal of Education*, *52*(2), 383–407.

Garcia-Martin, J., Merchant, G., & Garcia-Sanchez, J.-N. (2016). Preparing to teach 21st century literacies. In C. Kosnik, S. White, C. Beck, B. Marshall, A. L. Goodwin, & J. Murray

(Eds.), *Building bridges: Rethinking literacy teacher education in a digital era* (pp. 43–55). Sense Publishers.

Gay, L. R., Mills, G. E., & Airasian, P. (2012). *Educational research: Competencies for analysis and applications* (10th ed.). Pearson Education Inc.

Gee, G. P. (2004). *Situated language and learning: A critique of traditional schooling*. Routledge. https://doi.org/10.4324/9780203594216

Gee, J. P. (2009). *New digital media and learning as an emerging area and "worked examples" as one way forward*. MIT Press.

Gee, J. P. (2011). *How to do discourse analysis: A toolkit*. Routledge.

Gee, J. P. (2015). *Literacy and education*. Routledge.

Gee, J. P. (2017). *Teaching, learning, literacy in our high-risk high-tech world: A framework for becoming human*. Teachers College Press.

Geser, G. (Ed.). (2012). *Open educational practices and resources: OLCOS roadmap 2012*. Open Learning Content Observation Services. https://www.olcos.org/cms/upload/docs/olcos_roadmap.pdf

Gibbs, L. (2022, October 13). *Writing bots*. Twitter. https://twitter.com/onlinecrslady/status/1580645537602097152

GO-GN. (n.d.). *About GO-GN*. GO-GN Global OER Graduate Network. https://go-gn.net/about/

Goodwin, A. L., & Kosnik, C. (2013). Quality teacher educators = quality teachers? Conceptualizing essential domains of knowledge for those who teach teachers. *Teacher Development*, *17*, 334–346.

Government of Canada. (2012, May 11). *About SSHRC*. Social Sciences and Humanities Research Council. https://www.sshrc-crsh.gc.ca/about-au_sujet/index-eng.aspx

Grant, C., & Osanloo, A. (2014). Understanding, selecting, and integrating a theoretical framework in dissertation research: Creating the blueprint for your "house". *Administrative Issues Journal: Education, Practice, and Research*, *4*(2), 12–26.

Gretter, S., & Yadav, A. (2018). What do preservice teachers think about teaching media literacy? An exploratory study using the theory of planned behavior. *Journal of Media Literacy Education*, *10*(1), 104–123.

Grizzle, A., & Singh, J. (n.d.). *Mil_five_laws_english.png*. UNESCO. Retrieved April 17, 2020, from http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CI/CI/pdf/Events/mil_five_laws_english.png

Grizzle, A., Torras Calvo, M. C., Moore, P., Dzuanni, M., Asthana, S., Wilson, C., Banda, F., & Onumagh, C. (2013). *Media and information literacy: Policy and strategy guidelines—UNESCO Digital Library*. UNESCO Digital Library. https://unesdoc.unesco.org/ark:/48223/pf0000225606

Guba, E. G., & Lincoln, Y. S. (2005). Paradigmatic controversies, contradictions, and emerging confluences. In N. K. Denzin & Y. S. Lincoln (Eds.), *Sage Handbook of Qualitative Research* (3rd ed., pp. 191–215). Sage Publications.

Gupta, S. (2017). Ethical issues in designing internet-based research: Recommendations for good practice. *Journal of Research Practice*, *13*(2), 1–14.

Halbert, K., & Chigeza, P. (2015). Navigating discourses of cultural literacy in teacher education. *Australian Journal of Teacher Education*, *40*(40). https://doi.org/10.14221/ajte.2015v40n11.9

Hammershaimb, L. (2018, April 19). *The transient spaces of studio learning: Building a theory of online studio pedagogy in graphic design education*. https://dt.athabascau.ca/jspui/handle/10791/257

Haraway, D. (1988). Situated knowledges: The science question in feminism and the privilege of partial perspective. *Feminist Studies*, *14*(3), 575–599. https://doi.org/10.2307/3178066

Hart, C. (1998). *Doing a literature review: Releasing the social science imaginiation*. Sage Publications.

Harwood, D., & Collier, D. R. (2017). The matter of the stick: Storying/ (re)storying children's literacies in the forest. *Journal of Early Childhood Literacy*, *17*(3), 336–352. https://doi.org/10.1177/1468798417712340

Hegarty, B. (2015). Attributes of open pedagogy: A model for using open educational resources. *Educational Technology*, 11.

Heldens, H. P. F. (2017). *Teacher educator collaboration: Activities, networks and dynamics* [Doctoral Thesis, Eindhoven University of Technology]. https://research.tue.nl/nl/publications/teacher-educator-collaboration-activities-networks-and-dynamics

Henriksen, D., & Cain, W. (2020). Creatively flexible technology fluent—Developing an optimal online teaching and design mindset. In S. McKenzie, F. Garivaldis, & K. R. Dyer (Eds.), *Tertiary online teaching and learning* (pp. 177–186). Springer Nature. https://doi.org/10.1007/978-981-15-8928-7

Henriksen, D., & Mishra, P. (2015). We teach who we are: Creativity in the lives and practices of accomplished teachers. *Teachers College Record*, *17*(070303), 1–46.

Hinrichsen, J., & Coombs, A. (2013). The five resources of critical digital literacy: A framework for curriculum integration. *Research in Learning Technology*, *21*. https://doi.org/10.3402/rlt.v21.21334

Hobbs, R. (2017). *Create to learn: Introduction to digital literacy*. John Wiley & Sons, Inc.

Hobbs, R. (2019, February 10). Defining digital literacy. *Renee Hobbs at the Media Education Lab*. https://mediaedlab.com/2019/02/10/defining-digital-literacy-2/

Hobbs, R., & Friesem, Y. (2019). The creativity of imitation in remake videos. *E-Learning and Digital Media*, *16*(4), 328–347. https://doi.org/10.1177/2042753019835556

Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020). The difference between emergency remote teaching and online learning. *Educause Review*. https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning

Hodgkinson-Williams, C., & Gray, E. (2009). Degrees of openness: The emergence of open educational resources at the University of Cape Town. *International Journal of Education and Development using Information and Communication Technology*, *5*(5), 101–116.

Hoechsmann, M. (2019). Pedagogy, precarity, and persuasion: The case for re/mix literacies. *The International Journal of Critical Media Literacy*, 93–101.

Hoechsmann, M., & DeWaard, H. (2015). *Mapping digital literacy policy and practice in the Canadian education landscape*. Media Smarts Canada. http://mediasmarts.ca/sites/mediasmarts/files/publication-report/full/mapping-digital-literacy.pdf

Hoechsmann, M., & Poyntz, S. (2012). *Media literacies: A critical introduction*. Wiley.

Hoechsmann, M., & Poyntz, S. (2017). Learning and teaching media literacy in Canada: Embracing and transcending eclecticism. *Taboo: The Journal of Culture and Education*, *12*(1). https://doi.org/10.31390/taboo.12.1.04

hooks, bell. (1994). *Teaching to transgress: Education as the practice of freedom.* Routledge.

Hordvik, M., MacPhail, A., & Ronglan, L. T. (2020). Developing a pedagogy of teacher education using self-study: A rhizomatic examination of negotiating learning and practice. *Teaching and Teacher Education*, *88*, 1–11. https://doi.org/10.1016/j.tate.2019.102969

Horton, F. W. (2008). *Understanding information literacy: A primer* [Document Archives]. UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000157020

Horton, M., & Freire, P. (1990). *We make the road by walking: Conversations on education and social change* (B. Bell, J. Gaventa, & J. Peters, Eds.). Temple University Press.

Ihde, D. (1978). *Technics and praxis* (Vol. 24). Springer Netherlands. https://doi.org/10.1007/978-94-009-9900-8

Ihde, D. (2003). *Postphenomenology—Again? Working Paper No. 3*. https://sts.au.dk/fileadmin/sts/publications/working_papers/Ihde_-_Postphenomenology_Again.pdf

Ihde, D. (2011). Stretching the in-between: Embodiment and beyond. *Foundations of Science*, *16*(2–3), 109–118. https://doi.org/10.1007/s10699-010-9187-6

Ihde, D. (2012). Postphenomenological re-embodiment. *Foundations of Science*, *17*(4), 373–377. https://doi.org/10.1007/s10699-011-9244-9

Ihde, D. (2015). Positioning Postphenomenology. In R. Rosenberger & P. P. Verbeek (Eds.), *Postphenomenology investigations: Essays on human-technology relations* (pp. vii–xvi). Lexington Books.

Ihde, D., & Malafouris, L. (2019). Homo faber revisited: Postphenomenology and material engagement theory. *Philosophy & Technology*, *32*(2), 195–214. https://doi.org/10.1007/s13347-018-0321-7

Inamorato dos Santos, A. (2019). *Practical guidelines on open education for academics: Modernising higher education via open educational practices.* (JRC115663). Publications Office of the European Union. https://doi.org/10.2760/55923

Inamorato dos Santos, A., Punie, Y., & Castaño Muñoz, J. (2016). *Opening up education: A support framework for higher education institutions* (EUR 27938; p. 79). Publications Office of the European Union. https://doi.org/10.2791/293408 (online)

Interagency Advisory Panel on Research Ethics. (2016, February 5). *Interagency advisory panel on research ethics*. Government of Canada. https://ethics.gc.ca/eng/home.html

Irhouma, T., & Johnson, N. (2022). *Digital learning in Canada in 2022: A changing landscape*. Canadian Digital Learning Research Association. http://www.cdlra-acrfl.ca/wp-content/uploads/2023/01/2022_national_report_en.pdf

Ito, M., Baumer, S., Bittanti, M., boyd, danah, Cody, R., Herr-Setphenson, B., Horst, H. A., Lange, P. G., Mahendran, D., Martinez, K. Z., Pascoe, C. J., Perkel, D., Robinson, L., Sims, C., & Tripp, L. (2010). *Hanging out, messing around, and geeking out: Kids living and learning with new media*. The MIT Press. https://clalliance.org/wp-content/uploads/files/Hanging_Out.pdf

Izadinia, M. (2014). Teacher educators' identity: A review of the literature. *European Journal of Teacher Education*, *37*(4), 426–441. https://doi.org/10.1080/02619768.2014.947025

Jacobs, D. T. (2008a). "Flight of Ducks": Electronic dissertations Simon Pockley's story with Glen Gatin. In *The authentic dissertation: Alternative ways of knowing, research and representation* (pp. 244–250). Routledge.

Jacobs, D. T. (2008b). *The authentic dissertation: Alternative ways of knowing, research, and representation*. Taylor & Francis Inc. https://www.academia.edu/3717886/The_Authentic_Dissertation_-_Alternative_ways_of_knowing_research_and_representation

Jaipal-Jamani, K., Figg, C., Collier, D., Gallagher, T., Winters, K., & Ciampa, K. (2018). Developing TPACK of university faculty through technology leadership roles. *Journal of Educational Technology*. https://doi.org/10.17471/2499-4324/984

Jenkins, H. (2010, June 21). *Transmedia Education: The 7 Principles Revisited*. Henry Jenkins. http://henryjenkins.org/blog/2010/06/transmedia_education_the_7_pri.html

Jenkins, H., Purushotma, R., Weigel, M., Clinton, K., & Robison, A. J. (2009). *Confronting the challenges of participatory culture: Media education for the 21st century.* MIT Press.

Jhangiani, R., & DeRosa, R. (2018, March 16). *Open Pedagogy*. Open Pedagogy Notebook. http://openpedagogy.org/open-pedagogy/

Jones, L. M., & Mitchell, K. J. (2016). Defining and measuring youth digital citizenship. *New Media & Society*, *18*(9), 2063–2079. https://doi.org/10.1177/1461444815577797

Jožef Stefan Institute Centre for Knowledge Transfer in Information Technologies (CT3). (2020). *Open education for a better world – International online mentoring program*. http://oe4bw.ijs.si/

Kallinikos, J. (2002). *Reopening the black box of technology artifacts and human agency*. International Conference on Information Systems, Barcelona, Spain. http://eprints.lse.ac.uk/190/1/Kallinikos-ICIS.pdf

Kellner, D., & Share, J. (2019). *The critical media literacy guide: Engaging media and transforming education*. Brill Sense.

Kennedy, J. (2016). *Being, belonging, and becoming in immersive complexity: A post-intentional phenomenological analysis of connectedness in doctoral students' personal learning networks* [Doctoral Dissertation, University of Minnesota]. http://conservancy.umn.edu/handle/11299/183356

Kim, D. (2018). A framework for implementing OER-based lesson design activities for pre-service teachers. *International Review of Research in Open and Distributed Learning*, *19*(4).

Kimmons, R. (2016). Expansive openness in teacher practice. *Teachers College Record*, *118*(9), 1–26.

Kinchin, I. A., Streatfield, D., & Hay, D. B. (2010). Using concept mapping to enhance the research interview. *International Journal of Qualitative Methods*, *9*(1), 53–68.

Kitchen, J., & Petrarca, D. (2022). *Initial teacher education in Ontario: The four-semester teacher education programs after five years*. Canadian Association for Teacher Education (CATE). https://doi.org/10.11575/PRISM/39656

Knezek, G., Christensen, R., & Furuta, T. (2019). Validation of a teacher educator technology competencies survey. *Journal of Technology and Teacher Education*, *27*(4), 465–498.

Koehler, M. (2012, September 24). *TPACK explained*. What Is TPACK. http://tpack.org/

Koehler, M. J., & Mishra, P. (2009). What Is technological pedagogical content knowledge? *Contemporary Issues in Technology and Teacher Education*, *9*(1). https://www.citejournal.org/volume-9/issue-1-09/general/what-is-technological-pedagogicalcontent-knowledge

Koseoglu, S. (2017, May 16). Boundaries of openness. *Completely Different Readings*. https://differentreadings.com/2017/05/16/boundaries-of-openness/

Kosnik, C., Miyata, C., Cleovoulou, Y., Fletcher, T., & Menna, L. (2015). The education of teacher educators. In T. Falkenburg (Ed.), *Handbook of Canadian research in initial teacher education* (Vol. 6, pp. 207–224). https://cate-acfe.ca/wp-content/uploads/2019/05/Handbook-of-Canadian-Research-in-ITE-2015-1.pdf

Kress, G. (2010). *Multimodality: A social semiotic approach to contemporary communication*. Routledge.

Krumsvik, R. J. (2014). Teacher educators' digital competence. *Scandinavian Journal of Educational Research*, *58*(3), 269–280. https://doi.org/10.1080/00313831.2012.726273

Kuhn, C & Raffaghelli, J. (2022). *Report for the project: Understanding data: praxis and politics*. Zenodo. https://doi.org/10.5281/ZENODO.6482613

Lambert, S. R. (2018). Changing our (dis)course: A distinctive social justice aligned definition of open education. *Journal of Learning for Development*, *5*(3). https://jl4d.org/index.php/ejl4d/article/view/290

Lambert, S. R. (2019). Six critical dimensions: A model for widening participation in open, online and blended programs. *Australasian Journal of Educational Technology*, *35*(6), 161–182. https://doi.org/10.14742/ajet.5683

Lankshear, C., & Knobel, M. (Eds.). (2007). *Digital literacies: Concepts, policies and practices*. Peter Lang.

Lather, P. (1993). Fertile obsession: Validity after poststructuralism. *The Sociological Quarterly*, *34*(4), 673–693.

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge University Press.

Law, N., Woo, D., de la Torre, J., & Wong, G. (2018). *A global framework of reference on digital literacy skills for indicator 4.4.2*. UNESCO Institute for Statistics. http://uis.unesco.org/sites/default/files/documents/ip51-global-framework-reference-digital-literacy-skills-2018-en.pdf

Leaning, M. (2019). An approach to digital literacy through the integration of media and information literacy. *Media and Communication*, *7*(2), 4–13. https://doi.org/10.17645/mac.v7i2.1931

Lemos, G., & Nascimbeni, F. (2016). *ELINET position paper on digital literacy*. European Literacy Policy Network. http://www.eli-net.eu/fileadmin/ELINET/Redaktion/Amsterdam_conference/ELINET_Position_Paper_on_Digital_Literacy.pdf

Livingston, K. (2014). Teacher educators: Hidden professionals? *European Journal of Education*, *49*(2), 218–234. https://doi.org/10.1111/ejed.12074

Livingston, K. (2017). The complexity of learning and teaching: Challenges for teacher education. *European Journal of Teacher Education*, *40*(2), 141–143. https://doi.org/10.1080/02619768.2017.1296535

Lloyd, A. (2019). Chasing Frankenstein's monster: Information literacy in the black box society. *Journal of Documentation*, *75*(6), 1475–1485. https://doi.org/10.1108/JD-02-2019-0035

Lohnes Watulak, S. (2016). Reflection in action: Using inquiry groups to explore critical digital literacy with pre-service teachers. *Educational Action Research*, *24*(4), 503–518. http://dx.doi.org/10.1080/09650792.2015.1106957

Lohnes Watulak, S. (2018). Making space for preservice teacher agency through connected learning in preservice educational technology courses. *Journal of Digital Learning in Teacher Education*, *34*(3), 166–178. https://doi.org/10.1080/21532974.2018.1453894

Lohnes Watulak, S., Woodard, R., Smith, A., Johnson, L., Phillips, N., & Wargo, K. (2018). Connected teaching and learning in K-16+ contexts: An annotated bibliography. *Contemporary Issues in Technology and Teacher Education*, *18*(2), 289–312.

Lowenthal, P., & Muth, R. (2009). Constructivism. In E. F. Provenzo Jr. & A. B. Provenzo (Eds.), *Encyclopedia of the social and cultural foundations of education* (pp. 178–179). Sage Publishing. http://dx.doi.org.ezproxy.lakeheadu.ca/10.4135/9781412963992.n86

Lucier, R. (2012). *7 degrees of connectedness*. https://flic.kr/p/bURwCz

Luke, A. (2012). Critical literacy: Foundational notes. *Theory Into Practice*, *51*(4), 4–11. https://doi.org/10.1080/00405841.2012.636324

Luttrell, W. (2000). "Good enough" methods for ethnographic research. *Harvard Educational Review*, *70*(4), 499.

MacKenzie, A., Bacalja, A., Annamali, D., Panaretou, A., Girme, P., Cutajar, M., Abegglen, S., Evens, M., Neuhaus, F., Wilson, K., Psarikidou, K., Koole, M., Hrastinski, S., Sturm, S., Adachi, C., Schnaider, K., Bozkurt, A., Rapanta, C., Themelis, C., … Gourlay, L. (2022). Dissolving the Dichotomies Between Online and Campus-Based Teaching: A Collective Response to The Manifesto for Teaching Online (Bayne et al. 2020). *Postdigital Science and Education*, *4*(2), 271–329. https://doi.org/10.1007/s42438-021-00259-z

Markham, A. (2016, January 20). *Ethnography in the digital internet era: From fields to flows, descriptions to interventions* [Online article]. http://jeremydean.org/blog/wp-content/uploads/2016/02/ethnographyinthedigitalera2016finaldraft.pdf

Markham, A., & Buchanan, E. (2012). *Ethical decision-making and internet research: Recommendations from the AoIR ethics working committee (Version 2.0)* [AOIR Ethics Working Committee]. http://aoir.org/reports/ethics2.pdf

Martínez-Bravo, M. C., Sádaba Chalezquer, C., & Serrano-Puche, J. (2022). Dimensions of digital literacy in the 21st century competency frameworks. *Sustainability*, *14*(3), 1867. https://doi.org/10.3390/su14031867

Marzano, R. J. (2007). *The art and science of teaching: A comprehensive framework for effective instruction*. Association for Supervision and Curriculum Development.

McAleese, S., & Brisson-Boivin, K. (2022). *From access to engagement: A digital media literacy strategy for Canada*. MediaSmarts. https://mediasmarts.ca/research-policy

McAndrew, P., & Farrow, R. (2013). Open education research: From the practical to the theoretical. In R. McGreal, W. Kinuthia, & S. Marshall (Eds.), *Open educational resources: Innovation, research and practice* (pp. 65–78). Commonwealth of Learning and Athabasca University; http://oro.open.ac.uk/37756/. http://oro.open.ac.uk/37756/1/OER-IRP-mcandrew-farrow.pdf

McDonagh, A., Camilleri, P., Engen, B. K., & McGarr, O. (2021). Introducing the PEAT model to frame professional digital competence in teacher education. *Nordic Journal of Comparative and International Education (NJCIE)*, *5*(4), 5–17. https://doi.org/10.7577/njcie.4226

McGreal, R. (2017). Special report on the role of open educational resources in supporting the sustainable development goal 4: Quality education challenges and opportunities. *The*

International Review of Research in Open and Distributed Learning, *18*(7). https://doi.org/10.19173/irrodl.v18i7.3541

McLuhan, M. (1964). The medium is the message. In *Understanding media: The extension of man*. MIT Press. https://web.mit.edu/allanmc/www/mcluhan.mediummessage.pdf

McLuhan, M., & McLuhan, E. (1992). *Laws of media: The new science*. University of Toronto Press.

MediaSmarts. (n.d.). *About us*. MediaSmarts Canada. https://mediasmarts.ca/about-us

Mentis, M., Holley-Boen, W., Butler, P., Kearney, A., Budd, J., Riley, T., MacArthur, J., Dharan, V., & Bevan-Brown, J. (2016). Mawhai: Webbing a professional identity through networked interprofessional communities of practice. *Teaching and Teacher Education*, *60*, 66–75.

Mewburn, I., & Thomson, P. (2018). Towards an academic self? Blogging during the doctorate. In D. Lupton, I. Mewburn, & P. Thomson (Eds.), *The digital academic: Critical perspectives on digital technologies in higher education* (pp. 20–35). Routledge.

Mihailidis, P., Ramasubramanian, S., Tully, M., Foster, B., Riewestahl, E., Johnson, P., & Angove, S. (2021). Do media literacies approach equity and justice? *Journal of Media Literacy Education*, *13*(2), 1–14. https://doi.org/10.23860/JMLE-2021-13-2-1

Mills, K. A., & Comber, B. (2013). Space, place, and power: The spatial turn in literacy research. In K. Hall, T. Cremin, B. Comber, & L. C. Moll (Eds.), *International handbook of research on children's literacy, learning, and culture* (pp. 412–423). John Wiley & Sons, Ltd. https://doi.org/10.1002/9781118323342.ch30

Mirra, N. (2019). From connected learning to connected teaching: Reimagining digital literacy pedagogy in English teacher education. *English Education*, *51*(3), 261–291.

Mirra, N., & Garcia, A. (2020). In search of the meaning and purpose of 21st-century literacy learning: A critical review of research and practice. *Reading Research Quarterly*, *56*(3), 463–496. https://doi.org/10.1002/rrq.313

Mirra, N., Morrell, E., & Filipiak, D. (2018). From digital consumption to digital invention: Toward a new critical theory and practice of multiliteracies. *Theory Into Practice*, *57*(1), 12–19. https://doi.org/10.1080/00405841.2017.1390336

Mitchell, K. M., & Clark, A. M. (2021). Enhance your qualitative analysis with writing: Four principles of writing as inquiry. *International Journal of Qualitative Methods*, *20*, 160940692110579. https://doi.org/10.1177/16094069211057997

Montoya, S. (2018, September 12). Meet the SDG 4 data: Indicators on school conditions, scholarships and teachers. *UNESCO.Org*. http://uis.unesco.org/en/blog/meet-sdg-4-data-indicators-school-conditions-scholarships-and-teachers

Moore, N. (2012). The politics and ethics of naming: Questioning anonymisation in (archival) research. *International Journal of Social Research Methodology*, *15*(4), 331–340. https://doi.org/10.1080/13645579.2012.688330

Morris, S. M. (2017, May 1). Critical digital pedagogy and design. *Sean Michael Morris*. https://www.seanmichaelmorris.com/critical-digital-pedagogy-and-design/

Morris, S. M. (2020, December 3). Teaching through the screen. *Sean Michael Morris*. https://www.seanmichaelmorris.com/teaching-through-the-screen-and-the-necessity-of-imagination-literacy/

Moz://a. (n.d.). *Web literacy overview*. Mozilla Foundation. https://foundation.mozilla.org/en/initiatives/web-literacy/

Nascimbeni, F. (2018). Rethinking digital literacy for teachers in open and participatory societies. *Research Gate*. https://doi.org/10.4018/IJDLDC.2018070101

Nascimbeni, F., & Burgos, D. (2016). In search for the open educator: Proposal of a definition and a framework to Increase openness adoption among university educators. *The International Review of Research in Open and Distributed Learning*, *17*(6). http://dx.doi.org/10.19173/irrodl.v17i6.2736

Nerantzi, C. (2019). The role of crossing boundaries in collaborative open learning in cross-institutional academic development. *Research in Learning Technology*, *27*. http://dx.doi.org/10.25304/rlt.v27.2111

Nichols, T. P., Smith, A., Bulfin, S., & Stornaiuolo, A. (2021). Critical literacy, digital platforms, and datafication. In J. Z. Pandya, R. A. Mora, J. H. Alford, N. A. Golden, & R. S. de Roock, *The Handbook of Critical Literacies* (1st ed., pp. 345–353). Routledge. https://doi.org/10.4324/9781003023425-40

Nichols, T. P., & Stornaiuolo, A. (2019). Assembling "digital literacies": Contingent pasts, possible futures. *Media and Communication*, *7*(2), 14–24. https://doi.org/10.17645/mac.v7i2.1946

Noddings, N., & Enright, D. S. (1983). The promise of open education. *Theory into Practice*, *22*(3), 182–189.

O'Byrne, I., Roberts, V., LaBonte, R., & Graham, L. (2014). Teaching, learning, and sharing openly online. *Journal of Adolescent & Adult Literacy*, *58*(4), 277–280. https://doi.org/10.1002/jaal.365

Oddone, K. (2019). *Teachers' experience of professional learning through personal learning networks* [PhD Thesis; Doctor of Philosophy, Queensland University of Technology, Faculty of Education]. https://eprints.qut.edu.au/127928/1/Kay_Oddone_Thesis.pdf

Oddone, K., Hughes, H., & Lupton, M. (2019). Teachers as connected professionals: A model to support professional learning through personal learning networks. *International Review*

of Research in Open and Distributed Learning, *20*(3). https://doi.org/10.19173/irrodl.v20i4.4082

OECD. (2018). *Education at a glance 2018: OECD indicators*. OECD Publishing, Paris, France. http://dx.doi.org/10.1787/eag-2018-en

OED Online. (2020a). Competency. In *OED Online*. Oxford University Press. www.oed.com/view/Entry/37569

OED Online. (2020b). Fluency. In *OED Online*. Oxford University Press. www.oed.com/view/Entry/72066

OED Online. (2022). Criticality, n. In *OED Online*. Oxford University Press.

OED Online. (2023). Practise | practice, n. In *OED Online*. Oxford University Press.

Office of the Registrar. (2023). *Teaching quality standard*. Alberta Education. https://www.alberta.ca/system/files/custom_downloaded_images/ed-teaching-quality-standard-english-print-ready.pdf

O'Neill, N. (2021). Examining the Use of Open Educational Resources among Faculty in Departments with Multiple OER Course Conversions: Implications for Practice. *Dissertations Available from ProQuest*, 1–428. https://repository.upenn.edu/dissertations/AAI28775862

Ontario College of Teachers. (2020). *Standards of practice*. Ontario College of Teachers. https://www.oct.ca/public/professional-standards/standards-of-practice

Pahl, K., Rowsell, J., Collier, D., Pool, S., Rasool, Z., & Trzecak, T. (2020). *Living literacies: Literacy for social change*. MIT Press.

Pahl, K., & Rowsell, J. (2011). Artifactual critical literacy: A new perspective for literacy education. *Berkeley Review of Education*, *2*(2), 121–151.

Palmer, P. J. (2017). *The courage to teach: Exploring the inner landscape of a teacher's life* (20th Anniversary Edition). John Wiley & Sons, Inc.

Pangrazio, L. (2016). Reconceptualising critical digital literacy. *Discourse: Studies in the Cultural Politics of Education*, *37*(2), 163–174. https://doi.org/10.1080/01596306.2014.942836

Pangrazio, L., & Selwyn, N. (2019). 'Personal data literacies': A critical literacies approach to enhancing understandings of personal digital data. *New Media & Society*, *21*(2), 419–437. https://doi.org/10.1177/1461444818799523

Papert, S., & Harel, I. (1991). *Situating constructionism*. http://www.papert.org/articles/SituatingConstructionism.html

Park, Y., Sassi, M., & McCabe, K. (2020, October 10). *New standards will help nations accelerate digital literacy and digital skills building* [Working Groups]. IEEE SA. https://standards.ieee.org/beyond-standards/new-standard-will-help-nations-accelerate-digital-literacy-and-digital-skills-building/

Paskevicius, M. (2017). Conceptualizing open educational practices through the lens of constructive alignment. *Open Praxis*, *9*(2), 125–140.

Paskevicius, M. (2018). *Exploring educators experiences implementing open educational practices* [Doctoral Dissertation, University of Victoria]. https://dspace.library.uvic.ca//handle/1828/10414 https://doi.org/10.5683/SP2/CA77BB

Paskevicius, M. (2021). Educators as content creators in a diverse digital media landscape. *Journal of Interactive Media in Education*, *2021*(1), 18. https://doi.org/10.5334/jime.675

Paskevicius, M., & Irvine, V. (2019). Open education and learning design: Open pedagogy in praxis. *Journal of Interactive Media in Education*, *2019*(1), Article 1. https://doi.org/10.5334/jime.512

Petrarca, D., & Kitchen, J. (2017a). A time of change in Ontario's initial teacher education. In D. Petrarca & J. Kitchen (Eds.), *Initial teacher education in Ontario: The first year of four-*

semester teacher education programs. Canadian Association of Teacher Education (CATE). https://drive.google.com/file/d/0B-36OcipMmoPU2kyNzJ0ZWU1WlE/view

Petrarca, D., & Kitchen, J. (2017b). *Initial teacher education in Ontario: The first year of four-semester teacher education programs* (Vol. 9). Canadian Association for Teacher Education/Canadian Society for Studies in Education. https://cate-acfe.ca/wp-content/uploads/2019/05/Petrarca_Kitchen_CATE_ITE_Ontario_July_2017_final.pdf

Phuong, T. T., Cole, S. C., & Zarestky, J. (2018). A systematic literature review of faculty development for teacher educators. *Higher Education Research & Development*, *37*(2), 373–389.

Piaget, J. (1977). The role of action in the development of thinking. In W. F. Overton & J. M. Gallagher (Eds.), *Knowledge and development: Advances in Research and Theory* (Vol. 1, pp. 17–42). Springer US. https://doi.org/10.1007/978-1-4684-2547-5_2

Pink, S., Horst, H., Postill, J., Hjorth, L., Lewis, T., & Tacchi, J. (2015). *Digital ethnography: Principles and practices*. SAGE Publications Inc.

Pisova, M., & Janik, T. (2011). On the nature of expert teacher knowledge. *Orbis Scholae*, *5*(2), 95–115.

Pluim, G., & Hunter, S. (2022). Changing educational landscapes and the importance of mental well-being in teacher education. In P. Danyluk, A. Burns, L. S. Hill, & K. Crawford (Eds.), *Crisis and opportunity: How Canadian Bachelor of Education programs responded to the pandemic* (eBook, Vol. 11, pp. 290–303). Canadian Association for Teacher Education/Canadian Society for the Study of Education. https://prism.ucalgary.ca/handle/1880/114319

Pomerantz, J., & Peek, R. (2016). Fifty shades of open. *First Monday*, *21*(5). http://firstmonday.org/ojs/index.php/fm/article/view/6360

Raffaghelli, J. E. (2022). Educators' data literacy. In L. Pangrazio & J. Sefton-Green, *Learning to Live with Datafication* (1st ed., pp. 80–99). Routledge. https://doi.org/10.4324/9781003136842-5

Raffaghelli, J. E., & Stewart, B. (2020). Centering complexity in 'educators' data literacy' to support future practices in faculty development: A systematic review of the literature. *Teaching in Higher Education*, *25*(4), 435–455. https://doi.org/10.1080/13562517.2019.1696301

Ranse, J., Arbon, P., Cusack, L., Shaban, R. Z., & Nicholls, D. (2020). Obtaining individual narratives and moving to an intersubjective lived-experience description: A way of doing phenomenology. *Qualitative Research*, *20*(6), 945–959. https://doi.org/10.1177/1468794120905988

Redecker, C. (2017). *European framework for the digital competence of educators: DigCompEdu* (EUR - Scientific and Technical Research Reports EUR 28775 EN). Publications Office of the European Union. https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/european-framework-digital-competence-educators-digcompedu

Research Council of Canada. (2014). *Tri-council policy statement: Ethical conduct for research involving humans*. Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, and Social Sciences and Humanities Research Council. http://www.pre.ethics.gc.ca/eng/policy-politique_tcps2-eptc2_2018.html

Ribble, M. (n.d.). *Nine elements of digital citizenship*. Digital Citizenship. Retrieved April 25, 2020, from http://digitalcitizenship.net/nine-elements.html

Richardson, L. (2001). Getting personal: Writing stories. *Qualitative Studies in Education*, *14*(1), 33–38.

Rincon, O., & Marroquin, A. (2020). The Latin American lo popular as a theory of communication. In H. C. Stephansen & E. Treré (Eds.), *Citizen media and practice: Currents, connections, challenges*. Routledge.

Roberts, V. (2019). *Open educational practices (OEP): Design-based research on expanded high school learning environments, spaces, and experiences* [Doctoral Dissertation, University of Calgary]. https://prism.ucalgary.ca/bitstream/handle/1880/110926/ucalgary_2019_roberts_verena.pdf?sequence=6&isAllowed=y

Roberts, V. (2022). Open learning design for using open educational practices in high school learning contexts and beyond. *Journal for Multicultural Education*, *16*(5), 491–507. https://doi.org/10.1108/JME-01-2022-0019

Roberts, V., Blomgren, C., Ishmael, K., Graham, L., & Ferdig, R. E. (2018). Open educational practices in K-12 online and blended learning environments. In K. Kennedy (Ed.), *Handbook of research on K-12 online and blended learning* (2nd ed., pp. 527–544). Carnegie Mellon University: ETC Press. https://kilthub.cmu.edu/articles/Handbook_of_Research_on_K-12_Online_and_Blended_Learning_Second_Edition_/6686813

Roberts, V., Havemann, L., & DeWaard, H. (2022). Intentional Open Learning Design. In T. Jaffer, S. Govender, & L. Czerniewicz (Eds.), *Learning design voices*.

Robertson, L., Hughes, J., & Smith, S. (2012). “Thanks for the assignment”: Digital stories as a form of reflective practice. *Language and Literacy*, *14*(1), 78–90.

Rocha, S. (2015). *Folk phenomenology: Education, study, and the human person*. Pickwick Publications.

Rogow, F. (2019). Media resource review: Crash course in media literacy. *Journal of Media Literacy Education*, *11*(1), 120–126. https://doi.org/10.23860/JMLE-2019-11-1-7

Rolfe, V. (2012). Open educational resources: Staff attitudes and awareness. *Research in Learning Technology*, *20*(0). https://doi.org/10.3402/rlt.v20i0.14395

Rolfe, V. (2017). Striving toward openness: But what do we really mean? *The International Review of Research in Open and Distributed Learning*, *18*(7), 75–88.

Rosenberger, R., & Verbeek, P. P. (2015). A field guide to postphenomenology. In R. Rosenberger & P. P. Verbeek (Eds.), *Postphenomenological investigations: Essays on human-technology relations* (pp. 9–41). Lexington Books.

Roth, W.-M., & Lee, Y.-J. (2007). "Vygotsky's neglected legacy": Cultural-historical activity theory. *Review of Educational Research*, *77*(2), 186–232. https://doi.org/10.3102/0034654306298273

Russell, T., & Dillon, D. (2015). The design of Canadian teacher education programs. In Falkenberg, T (Ed.), *Handbook of Canadian research in initial teacher education* (pp. 151–165). Canadian Association for Teacher Education. https://cate-acfe.ca/wp-content/uploads/2019/05/Handbook-of-Canadian-Research-in-ITE-2015-1.pdf

Saldaña, J. (2016). *The coding manual for qualitative researchers*. Sage.

Saldaña, J., & Omasta, M. (2018). *Qualitative research: Analyzing life*. Sage.

Sameshima, P., White, B., & Sinner, A. (Eds.). (2019). *Ma: Materiality in teaching and learning* (Vol. 528). Peter Lang.

Sánchez-López, I., Bonilla-del-Río, M., & Soares, I. O. (2021). Digital creativity to transform learning: Empowerment from a com-educational approach. *Comunicar*, *29*(69), 113–123. https://doi.org/10.3916/C69-2021-09

Santo, R. (2013). Towards hacker literacies: What Facebook's privacy snafus can teach us about empowering technological practices. *Digital Culture & Education*, *5*(1), 18–33.

Saunders, B., Kitzinger, J., & Kitzinger, C. (2015). Anonymising interview data: Challenges and compromise in practice. *Qualitative Research*, *15*(5), 616–632. https://doi.org/10.1177/1468794114550439

Schleicher, A. (2018). *Valuing our teachers and raising their status: How communities can help.* (International Summit on the Teaching Profession, pp. 1–116). Organization for Economic Cooperation and Development (OECD). http://dx.doi.org.ezproxy.lakeheadu.ca/10.1787/9789264292697-en

Schmidt, A. L. (2010). The battle for creativity: Frontiers in science and science education. *BioEssays*, *32*(12), 1016–1019. https://doi.org/10.1002/bies.201000092

Schmidt-Crawford, D., Lindstrom, D., & Thompson, A. (2018). Addressing the "Why" for integrating technology in teacher preparation. *Journal of Digital Learning in Teacher Education*, *34*(3), 132–133. https://doi.org/10.1080/21532974.2018.1465783

Scott, D. (2014). Criterial judgements in education: Knowledge and research. In A. D. Reid, E. P. Hart, & M. A. Peters (Eds.), *A companion to research in education* (pp. 500–507). Springer. https://doi.org/10.1007/978-94-007-6809-3_57

Seely Brown, J., Collins, A., & Duguid, P. (1989). Situated cognition and the culture of learning. *Educational Researcher*, *18*(1), 32–42. https://doi.org/10.3102/0013189X018001032

Seko, Y., & Lewis, S. (2017). "We tend to err on the side of caution": Ethical challenges facing Canadian research ethics boards when overseeing internet research. In M. Zimmer & K. Kinder-Kurlanda (Eds.), *Internet Research Ethics for the Social Age* (pp. 133–150). Peter Lang.

Selwyn, N. (2023). Lessons to Be Learnt? Education, Techno-solutionism, and Sustainable Development. In H. Skaug Sætra (Ed.), *Technology and Sustainable Development*. Routledge.

Selwyn, N., Pangrazio, L., & Cumbo, B. (2022). Knowing the (datafied) student: The production of the student subject through school data. *British Journal of Educational Studies*, *70*(3), 345–361. https://doi.org/10.1080/00071005.2021.1925085

Serafini, L. (1981). *Codex Seraphinianus*. Rizzoli International Publications Inc.

Seward, T. P., & Nguyen, H. T. (2019). The digital imperative in the 21st century classroom: Rethinking the teacher-learner dynamic. *Issues in Teacher Education*, *28*(1), 80–98.

Siemens, G. (2012). *Orientation: Sensemaking and wayfinding in complex distributed online information environments* [Doctoral Dissertation, University of the Highlands and Islands]. https://pure.uhi.ac.uk/portal/files/3077978/George_Siemens_thesis.pdf

Siemens, G. (2018). Connectivism: A learning theory for the digital ages. In R. E. West (Ed.), *Foundations of learning and instructional design technology* (1st ed.). Pressbooks. https://lidtfoundations.pressbooks.com/

Singh, J., Kerr, P., & Hamburger, E. (2016). *MILID Yearbook 2016 Media and information literacy: Reinforcing human rights, countering radicalization and extremism*. UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000246371

Smith, J. A. (2004). Reflecting on the development of interpretative phenomenological analysis and its contribution to qualitative research in psychology. *Qualitative Research in Psychology*, *1*(1), 39–54. https://doi.org/10.1191/1478088704qp004oa

Snowden, M. L. (2011). “Bettering her education and widening her sphere”: Betwixt and between coeducational experiences. *Qualitative Inquiry*. https://doi.org/10.1177/1077800411425148

Sobe, N. W. (2022, April 26). *A new social contract and a new grammar of schooling* [UNESCO]. UNESCO Futures of Education Ideas LAB. https://en.unesco.org/futuresofeducation/ideas-lab/sobe-new-grammar-of-schooling

Spante, M., Sofkova Hashemi, S., Lundin, M., & Algers, A. (2018). Digital competence and digital literacy in higher education research: Systematic review of concept use. *Cogent Education*. https://doi.org/10.1080/2331186X.2018.1519143

St. Pierre, E. A. S. (2013). The posts continue: Becoming. *International Journal of Qualitative Studies in Education*, *26*(6), 646–657. https://doi.org/10.1080/09518398.2013.788754

Stagg, A. (2017). The ecology of the open practitioner: A conceptual framework for open research. *Open Praxis*, *9*(4), 363–374.

Steiner, T. (2018). *Open educational practice (OEP): Collection of scenarios*. https://doi.org/10.5281/zenodo.1183806

Stewart, B. (2015a). In abundance: Networked participatory practices as scholarship. *The International Review of Research in Open and Distributed Learning*, *16*(3). http://www.irrodl.org/index.php/irrodl/article/view/2158/3343

Stewart, B. (2015b). Open to influence: What counts as academic influence in scholarly networked Twitter participation. *Learning, Media and Technology*, *40*(3), 287–309.

Stewart, B. (2021). The open dissertation: How social media shaped—And scaled—My PhD process. In J. Sheldon & V. Sheppard (Eds.), *Online communities for Ph.D researchers: Building engagement with social media.* (pp. 8–22). Routledge.

Stewart, B. E., & Lyons, E. (2021). When the classroom becomes datafied: A baseline for building data ethics policy and data literacies across higher education. *Italian Journal of Educational Technology*, *IJET-ONLINE FIRST*. https://doi.org/10.17471/2499-4324/1203

Stewart, H., Gapp, R., & Harwood, I. (2017). Exploring the alchemy of qualitative management research: Seeking trustworthiness, credibility and rigor through crystallization. *The Qualitative Report*, *22*(1), 1–19. https://doi.org/10.46743/2160-3715/2017.2604

Stewart, O., Hsieh, B., Smith, A., & Pandya, J. Z. (2021). What more can we do? A scalar approach to examining critical digital literacies in teacher education. *Pedagogies: An International Journal*, *16*(2), 125–137. https://doi.org/10.1080/1554480X.2021.1914054

Stillman, J., Ahmed, K. S., Beltramo, J. L., Catañeda-Flores, E., Garza, V. G., & Pyo, M. (2019). From the ground up: Cultivating teacher educator knowledge from the situated knowledges of emerging, asset-oriented teacher educators. *Asia-Pacific Journal of Teacher Education*, *47*(3), 265–285. https://doi.org/10.1080/1359866X.2019.1600187

Stokes-Beverley, C., & Simoy, I. (2016). *Advancing educational technology in teacher preparation: Policy brief* (pp. 1–22). Department of Educational Technology. https://tech.ed.gov/files/2016/12/Ed-Tech-in-Teacher-Preparation-Brief.pdf

Stordy, P. H. (2015). Taxonomy of literacies. *Journal of Documentation*, *71*(3), 456–476. http://dx.doi.org/10.1108/JD-10-2013-0128

Stornaiuolo, A., & LeBlanc, R. J. (2016). Scaling as a literacy activity: Mobility and educational inequality in an age of global connectivity. *Research in the Teaching of English*, *50*(3), 263–287.

Street, B. (2003). What's "new" in new literacy studies? Critical approaches to literacy in theory and practice. *Current Issues in Comparative Education*, *5*(2). https://www.tc.columbia.edu/cice/pdf/25734_5_2_Street.pdf

Street, B. (2013). Literacy in theory and practice: Challenges and debates over 50 years. *Theory Into Practice*, *52*(1), 52–62. https://doi.org/10.1080/00405841.2013.795442

Style, E. (1988). *Curriculum as window and mirror*. National SEED Project. https://nationalseedproject.org/Key-SEED-Texts/curriculum-as-window-and-mirror

Sukovic, S. (2016). Transliteracy: The art and craft of "moving across." *SciTech Connect*. http://scitechconnect.elsevier.com/transliteracy-art-of-moving-across/

Taimalu, M., & Luik, P. (2019). The impact of beliefs and knowledge on the integration of technology among teacher educators: A path analysis. *Teaching and Teacher Education*, *79*, 101–110. https://doi.org/10.1016/j.tate.2018.12.012

The New London Group. (1996). A pedagogy of multiliteracies: Designing social futures. *Harvard Educational Review*, *66*(1), 60–93. https://doi.org/10.17763/haer.66.1.17370n67v22j160u

The Truth and Reconciliation Commission. (2015). *Truth and reconciliation commission of Canada: Calls to action*. https://www2.gov.bc.ca/assets/gov/british-columbians-our-governments/indigenous-people/aboriginal-peoples-documents/calls_to_action_english2.pdf

Thomas, A., Peterson, D., & Abebe, F. (2019). Adopting TETCs in integrated elementary mathematics and technology coursework: A collaborative self-study of two teacher educators. *Journal of Technology and Teacher Education*, *27*(4), 499–525.

Thomas, D., & Seely Brown, J. (2009, June). Learning for a world of constant change: Homo sapiens, homo faber & homo ludens revisited. *7th Glion Colloquium*. https://johnseelybrown.com/Learning4aWorldofConstantChangeannotated.pdf

Thornburg, D. (2004). Campfires in cyberspace. *International Journal of Instructional Technology and Distance Learning*, *1*(10), 3–10.

Tietjen, P., & Asino, T. I. (2021). What Is open pedagogy? Identifying commonalities. *The International Review of Research in Open and Distributed Learning*, *22*(2), 185–204. https://doi.org/10.19173/irrodl.v22i2.5161

Toffler, A. (1970). *Future shock*. Random House, Inc.

Tomaszewski, L. E., Zarestky, J., & Gonzalez, E. (2020). Planning qualitative research: Design and decision making for new researchers. *International Journal of Qualitative Methods*, *19*, 1–7. https://doi.org/10.1177/1609406920967174

Torrent, J., & Aparici, R. (2010, February 10). *Educommunication: Citizen participation and creativity*. Media and Information Literacy Clearinghouse. https://milunesco.unaoc.org/mil-articles/educommunication-citizen-participation-and-creativity/

Tour, E. (2017). Teachers' personal learning networks (PLNs): Exploring the nature of self-initiated professional learning online. *Literacy*, *51*(1), 11–18.

Tracy, S. J. (2010). Qualitative quality: Eight "big-tent" criteria for excellent qualitative research. *Qualitative Inquiry*, *16*(10), 837–851. https://doi.org/10.1177/1077800410383121

Tracy, S. J. (2020). *Qualitative research methods: Collecting evidence, crafting analysis, communicating impact* (2nd ed.). Wiley Blackwell.

Tracy, S. J., & Hinrichs, M. M. (2017). Big tent criteria for qualitative quality. In J. Matthes, C. S. Davis, & R. F. Potter (Eds.), *The International Encyclopedia of Communication Research Methods* (1st ed., pp. 1–10). Wiley. https://doi.org/10.1002/9781118901731.iecrm0016

Tran, A. (2019). *Multimodal dissertations: Opportunities for multimodality in higher education* [PhD Disseration, Western University]. Electronic Thesis and Dissertation Repository. https://ir.lib.uwo.ca/etd/6228

Troll Covey, D. (2013). Opening the dissertation: Overcoming cultural calcification and agoraphobia. *TripleC*, *11*(2), 543–557. https://doi.org/10.31269/triplec.v11i2.522

Tschofen, C., & Mackness, J. (2012). Connectivism and dimensions of individual experience. *The International Review of Research In Open And Distributed Learning*, *13*(1), 124–143. http://dx.doi.org/10.19173/irrodl.v13i1.1143

Tur, G., Havemann, L., Marsh, D., Keefer, J. M., & Nascimbeni, F. (2020). Becoming an open educator: Towards an open threshold framework. *Research in Learning Technology*, *28*. https://doi.org/10.25304/rlt.v28.2338

Turyahikayo, E. (2021). Philosophical paradigms as the bases for knowledge management research and practice. *Knowledge Management & E-Learning: An International Journal*, *13*(2), 209–224. https://doi.org/10.34105/j.kmel.2021.13.012

UNESCO. (2012). *Shaping the education of tomorrow: 2012 report on the UN Decade of Education for Sustainable Development, abridged—UNESCO Digital Library*. https://unesdoc.unesco.org/ark:/48223/pf0000216606

UNESCO. (2013). *Global media and information literacy assessment framework: Country readiness and competencies*. UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000224655

UNESCO. (2017). *Second world OER congress: Ljubljana OER action plan 2017*. UNESCO. https://en.unesco.org/sites/default/files/ljubljana_oer_action_plan_2017.pdf

UNESCO. (2021). *Reimagining our futures together: A new social contract for education.* International Commission on the futures of education. https://unesdoc.unesco.org/ark:/48223/pf0000379707

UNESCO. (2022). *The ICT competency framework for teachers harnessing OER project: Digital skills development for teachers* (Programme and Meeting Document CI-2022/WS/4). https://unesdoc.unesco.org/ark:/48223/pf0000383206.locale=en

UNESCO. (2018, March). *Fulfilling our collective responsibility: Financing global public goods in education—UNESCO Digital Library*. https://unesdoc.unesco.org/ark:/48223/pf0000261530

UNESCO. (2019, November). *Recommendation on open educational resources (OER)*. UNESCO. https://en.unesco.org/news/unesco-recommendation-open-educational-resources-oer

UNESCO. (2023, March 29). *UNESCO's ICT Competency Framework for Teachers*. UNESCO. https://www.unesco.org/en/digital-competencies-skills/ict-cft

United Nations. (2015). *Transforming our world: The 2030 agenda for sustainable development*. https://sustainabledevelopment.un.org/post2015/transformingourworld/publication

Vagle, M. D. (2015). Curriculum as post-intentional phenomenological text: Working along the edges and margins of phenomenology using post-structuralist ideas. *Journal of Curriculum Studies*, *47*(5), 594–612. https://doi.org/10.1080/00220272.2015.1051118

Vagle, M. D. (2018). *Crafting phenomenological research* (2nd ed.). Routledge.

Vagle, M. D. (2021). Post-intentionally considering post-qualitative inquiry. *Qualitative Inquiry*, *27*(2), 201–209. https://doi.org/10.1177/1077800420931129

Vagle, M., & Hofsess, B. (2016). Entangling a post-reflexivity through post-intentional phenomenology. *Qualitative Inquiry*, *22*(5), 334–344. https://doi.org/10.1177/1077800415615617

Valentine, K. D., Kopcha, T. J., & Vagle, M. D. (2018). Phenomenological methodologies in the field of educational communications and technology. *TechTrends*, *62*(5), 462–472. https://doi.org/10.1007/s11528-018-0317-2

van Barneveld, A., & DeWaard, H. (2021). Pre-class surveys to inform course design. In S. Hrastinski (Ed.), *Designing courses with digital technologies: Insights and examples from higher education* (pp. 149–153). Routledge.

Van Den Eede, Y., Goeminne, G., & Van den Bossche, M. (2015). The art of living with technology: Turning over philosophy of technology's empirical turn. *Foundations of Science*, *22*, 235–246. https://doi.org/10.1007/s10699-015-9472-5

van Manen, M. (2014). *Phenomenology of practice*. Routledge.

van Manen, M. A. (2020). Uniqueness and novelty in phenomenological inquiry. *Qualitative Inquiry*, *26*(5), 486–490. https://doi.org/10.1177/1077800419829788

Veletsianos, G. (2015). A case study of scholars' open and sharing practices. *Open Praxis*, *7*(3), 199–209.

Veletsianos, G., & Houlden, S. (2020). Radical flexibility and relationality as responses to education in times of crisis. *Postdigital Science and Education*, *2*(3), 849–862. https://doi.org/10.1007/s42438-020-00196-3

Veletsianos, G., & Stewart, B. (2016). Discreet openness: Scholars' selective and intentional self-disclosures online. *Social Media + Society*, *2*(3), 205630511666422. https://doi.org/10.1177/2056305116664222

Verbeek, P.-P. (2011). *Moralizing technology: Understanding and designing the morality of things*. The University of Chicago Press.

Vloet, K., & van Swet, J. (2010). "I can only learn in dialogue!" Exploring professional identities in teacher education. *Professional Development in Education*, *36*(1), 149–168.

Voithofer, R., Nelson, M., Han, G., & Caines, A. (2019). Factors that influence TPACK adoption by teacher educators in the US. *Education Technology Research Development*, 1–27. https://doi.org/10.1007/s11423-019-09652-9

Vygotsky, L. S. (1934). *The collected works of Vygotsky*. https://www.marxists.org/archive/vygotsky/collected-works.htm

Vygotsky, L. S. (1986). *Thought and language* (E. Hanfmann, G. Vakar, & A. Kozulin, Trans.). MIT Press. https://toc.library.ethz.ch/objects/pdf03/e01_978-0-262-51771-3_01.pdf

Wallis, P. D., & Rocha, T. (2022). Designing for resistance: Epistemic justice, learning design, and open educational practices. *Journal for Multicultural Education*, *16*(5), 554–564. https://doi.org/10.1108/JME-12-2021-0231

Watt, D. (2019). Video production in elementary teacher education as a critical digital literacy practice. *Media and Communication*, *7*(2), 82–99. https://doi.org/10.17645/mac.v7i2.1967

Weisgerber, C., & Butler, S. H. (2016). Curating the Soul: Foucault's concept of hupomnemata and the digital technology of self-care. *Information, Communication & Society*, *19*(10), 1340–1355. https://doi.org/10.1080/1369118X.2015.1088882

Weller, M. (2014). *The battle for open: How openness won and why it doesn't feel like victory* [Online book]. Ubiquity Press. http://dx.doi.org/10.5334/bam

Weller, M. (2016, December 13). The paradoxes of open scholarship. *The Ed Techie*. http://blog.edtechie.net/openness/the-paradoxes-of-open-scholarship/

Weller, M., Pitt, R., Iniesto, F., Algers, A., Almousa, S., Baas, M., Bentley, P., Bozkurt, A., Butler, W., Cardoso, P., Chtena, N., Cox, G., Czerwonogoro, A., Dabrowski, M. T., Derby, R., DeWaard, H., Elias, T., Essmiller, K., Funk, J., … Witthaus, G. (2023). *The GO-GN open research handbook* (R. Farrow, Ed.; Vol. 1st). Global OER Graduate Network / Open Education Research Hub. https://go-gn.net/gogn_outputs/open-research-handbook/

Wenger-Trayner, E., & Wenger-Trayner, B. (2015). *An introduction to communities of practice: A brief overview of the concept and its uses.* https://www.wenger-trayner.com/introduction-to-communities-of-practice

Werth, E., & Williams, K. (2022). The why of open pedagogy: A value-first conceptualization for enhancing instructor praxis. *Smart Learning Environments*, *9*(1), 10. https://doi.org/10.1186/s40561-022-00191-0

West-Puckett, S., Smith, A., Cantrill, C., & Zamora, M. (2018). The Fallacies of Open: Participatory Design, Infrastructuring, and the Pursuit of Radical Possibility. *Contemporary Issues in Technology & Teacher Education*, *18*(2), 203–232.

White, D. S., & Cornu, A. L. (2017). Using 'Visitors and Residents' to visualise digital practices. *First Monday*. https://doi.org/10.5210/fm.v22i8.7802

Wiley, D. (2013, October 21). *What is Open Pedagogy?* Improving Learning. https://opencontent.org/blog/archives/2975

Wiley, D. (2014, March 5). *The Access Compromise and the 5th R*. https://opencontent.org/blog/archives/3221

Wiley, D., & Hilton, J. (2018). Defining OER-enabled pedagogy. *The International Review of Research in Open and Distributed Learning*, *19*(4). http://www.irrodl.org/index.php/irrodl/article/view/3601/4769

Woloshyn, V. E., Kaefer, T., Savage, M., & Ratkovic, S. (2017). Exploring research methodologies: Mapping the Canadian education landscape as represented through two national journals. In S. Opic, B. Bognar, & S. Ratkovic (Eds.), *New approaches to research methodology in education* (pp. 223–266). University of Zagreb.

Young, S., & Nichols, H. (2017). A reflexive evaluation of technology-enhanced learning. *Research in Learning Technology*, *25*(0). https://doi.org/10.25304/rlt.v25.1998

Zaidi, R., & Rowsell, J. (Eds.). (2017). *Literacy lives in transcultural times*. Routledge.

Zawacki-Richter, O., Conrad, D., Bozkurt, A., Hakan Aydin, C., Bedenlier, S., Jung, I., Stoter, J., Veletsianos, G., Blaschke, L. M., Bond, M., Broens, A., Bruhn, E., Dolch, C., Kalz, M., Kerres, M., Kondakci, Y., Marin, V., Mayrberger, K., Muskens, W., … Xiao, J. (2020). Elements of open education: An invitation to future research. *International Review of Research in Open and Distributed Learning*, *21*(3), 319–334.

Zeichner, K. (2012). The turn once again toward practice-based teacher education. *Journal of Teacher Education*, *63*(5), 376–382. https://doi.org/10.1177/0022487112445789

Zimmer, B. (2018). *Democracy under threat: Risks and solutions in the era of disinformation and data monopoly. Report of the standing committee on access to information, privacy*

and ethics [Proceedings of the Canadian House of Commons]. Government of Canada. http://www.ourcommons.ca/Content/Committee/421/ETHI/Reports/RP10242267/ethirp17/ethirp17-e.pdf

Glossary Item Descriptions

Actor Network Theory
According to some researchers, ANT is neither a theory or a method for research. It is more descriptively understood as a paradigm, a way of sensing and seeing how 'actors' engage with/in the world (Blok, Farías, & Roberts, 2019, p. 1). It is sometimes known as a 'material semiotics' based on ontologies that "all entities in the world – from nanoparticles to bodies, groups, ecologies and ghosts – are constituted and reconstituted in shifting and hybrid webs of discursive and material relations" (Blok, Farías, & Roberts, 2019). Thinking and research within an ANT approach suggest categories of conceptual and methodological perspectives based on collective and iterative research into the sociology of science and technologies (Blok, Farías, & Roberts, 2019). Historically, "ANT has played an important role in rethinking the democratic challenges associated with the making of our socio-material worlds and made major intervention in current conceptualisations of 'participation'" (Blok, Farías, & Roberts, 2019, p. xxi). (return to Glossary List)

Affinity spaces
According to Gee (2017) affinity spaces are locations of learning, where membership is constituted by common interests and passions for a topic, project, activity, or game. Based on this common interest, membership in the spaces, either physical or digital, is characterized by ebbs and flows ranging from novice to experts. Features include: anyone can contribute, there is a distinction between individual and community knowledge, there are flexible ways for interactions to involve external sources of ideas, tacit knowledge is held as commonly accepted, spaces embrace varying forms of participation, status is achieved through a variety of contributions, and roles include both helper and teacher (Gee, 2015). (return to Glossary List)

Alternative Dissertation
Describing and defining what it means to create an alternative dissertation can be challenging for those familiar with traditional dissertation formats that include a linear progression through chapters and pages. For this document, consider the format as a non-linear, hyper-textually linked, dialogic, conceptually and topically interconnected, and networked by reader agency. This rendering of my research communicates through multiple and varied media, creating tension between traditional conceptions of scholarly writing as primarily alpha-numeric text to one where a fluid multimodality of elements communicate research information. Further to this, universities across Canada are redefining policies that define the dissertation (Tran, 2019). For example, York University in Toronto defines a "complex electronic dissertation" that "involves slides (visual, spatial, and linguistic modes), film or videos (visual, audio, gestural, linguistic, and spatial modes), or an interactive word/image-based text on the internet (visual, linguistic, spatial, and gestural modes)" (Tran, 2019, p. 28). (return to Glossary List)

Artificial intelligence
Artificial intelligence (AI) refers to the development of machine/ computer based systems that mirror, mimic, and augment human intelligence. Since the advent of the computer, authors such as Turing, Asimov, and McLuhan have foretold of a time when computers will supplant human cognition (Bozkurt et al., 2023).

In education, Bozkurt et al., (2023) suggested that "AI technologies are mostly adopted for predicting learner outcomes and behaviors (e.g., student achievement or dropout), tailoring learning experiences, providing an adaptive learning environment, improving academic performance and enhancing learning experiences" (p. 55). Critical issues that need to be highlighted and addressed include ethical issues, privacy concerns, issues with equity, and concerns with copyright and ownership of data (Bozkurt et al,. 2023). (return to Glossary List)

Black box technology

When considering technologies and the artifacts created using electronic technologies, there are elements that are hidden and unseen. They occur, as if there is a 'black box' taking input from one side of the box, completing some hidden operation on that input, and creating some form of output. These 'black box' processes, organizations, affordances, and experiences determine how human-technology interactions occur or are sustained. Kallinikos (2002) explored the issues relating to the "internal constitution of particular technologies" and the hidden premises that "govern the human- technology interaction" (p. 290). Kallinkos (2002) argued that "once constructed, such forms matter and they matter a lot. The closure or openness of artifacts and the premises by which they admit human participation are heavily contingent on the way they are internally organized as systems" (p. 290). (return to Glossary List)

Blockchain

From the US Education Department's website, blockchain is described as a:

> *record of chronological transactions, much like a traditional financial ledger. Each new set of transactions, "blocks," are recorded and cryptographically linked to the previous record, forming a chain. Key characteristics of a blockchain are: (1) Integrity – records are cryptographically linked, making them nearly impossible to change; (2) Transparency – because every network user has their own copy of the entire blockchain, updates are shared and transparent; (3) Democracy – blockchains enable verification of peer-to-peer transactions to occur without a centralized mediator. Blockchains and other types of Distributed Ledger Technologies (DLT) are the foundation of many high-profile technologies, like cryptocurrency (e.g. Bitcoin), and promise to change how data is managed and shared in a variety of industries, including education*

As suggested by Lemoie and Soares (2020), blockchain has potential to impact the efficiency, durability, and connections between education and work through the integration of blockchain in areas such as credentialing to "provide more granular descriptions of skills and improved communication among education and training organizations, individuals, and employers" (p. v). Blockchain, in particular, holds promise to create more efficient and durable connections between education and work. (return to Glossary List)

You can learn more about blockchain with this U.S. Department of Education video: Introduction to Blockchain.

ChatGPT

ChatGPT is described as a form of artificial intelligence (AI) software, created by the OpenAI company. It is a form of conversational technology, building on previous chatbot designs. The GPT acronym standing for Generative Pre-Trained Transformer (Bozkurt et al., 2023). Concerns include ChatGPT's potential of this technology to supplant human intelligence, breach copyright in how information is used, and enable or encourage violations to academic integrity such as plagiarism or cheating (Blose, 2023). You can learn more about ChatGPT in this Contact North document about 10 Facts

"What is striking about ChatGPT and other similar AI agents is their ability to present language as a soft technology just like humans do, a technology that has marked and reasoned almost all human advances" (Bozkurt et al., 2023, p. 57) (return to Glossary List)

CAQDAS

Computer assisted qualitative data analysis software (CAQDAS) are technologies that allow for the addition of codes, comments, memos, visualization, and generation of theories from portions of files such as transcripts, images, audio, video and other forms of qualitative data (Saldaña & Omasta, 2018). CAQDAS can also be applied to the analysis of research literature to support the formulation of the literature review. The software does not do the coding for the researcher, but "efficiently stores, organizes, manages, and reconfigures data to enable human analytic reflection" (Saldaña & Omasta, 2018, p. 268). Saldaña and Omasta (2018) provide a list of major CAQDAS software, include NVivo which was used for this research (page 268-269). (return to Glossary List)

Creative Commons

Creative Commons is a non-profit organization, a global presence, a movement, an accreditation system, a set of copyright licenses, a belief that everyone has something to share, there is a common good to sharing openly, and a feeling of a shared culture. (return to Glossary List)

Cynefin framework

The Cynefin framework (pronounced Kuh-nev-in) is used primarily in decision making, but applies to this research in guiding understanding of the infusion of MDL into OEPr by the TEds in this research. The word originates in the Welsh language, meaning habitat. The domains in the four quadrants emerge from systems theory, complexity theory, and learning theories (for purpose of brevity, you can see more on this Wikipedia - Cynefin Framework page). (return to Glossary List)

Data gathering

As suggested by Vagle (2018), data gathering best described the method of collection of the multiple moments in a research endeavour, including observations, writings, interviews, drawings, and music collected over a specified period of time. Vagle (2018) suggested data moments could include arts-based methods such as drawings, paintings, photos, visuals, films, and performance art. (return to Glossary List)

Digital Rights Management

Digital rights management (DRM) is a form of control applied to digital technologies in order to manage copyright access - usage, modifications, and/or distribution. Controls include forms of encryption, copying restrictions, tracking systems such as watermarks, and verification mechanisms such as product codes or activation limitations (Wikipedia, Digital Rights Management). For this research, DRM can impede the access and ability to remix materials for teaching and learning. One example is access to course readings through proprietary journal materials. DRM can challenge the open sharing of media and digitally enabled learning materials for the TEds interviewed.
(return to Glossary List)

Educommunication

Educommunication, (educommunicación) as defined by Oliveira Soares in 2003 and translated into English, is a:

> *set of actions inherent to planning, implementation and evaluation of processes, programs and products destined to create and strengthen communicative ecosystems in educational spaces, improve the communicative coefficient of educational actions, develop the critical spirit in users of mass media, adequately use information resources in educational practice and expand people's expression capability (Freitas & Ferreira, 2020, p. 57).*

For a clearer understanding of the concept of educommunication it is necessary to have a grounding in the importance of communication as an educative act and education as a communicative action. Freire's theory of communication emerges from Latin American cultures where silencing and suppression of public discourse, particularly in formal educational spaces, was the norm (Lago, et al., 2021).

Educommunicación is a "sub domain of theory and practice that intersects between Media Studies, Journalism and Communications, on the one hand, and Education on the other" (Hoechsmann, 2019, p. 264). The concept of educommunicación falls under the broader idea of communication as activism involved in creating social change, with a socio-political praxis at its core (Barbas, 2020; Mateus & Quiroz, 2017). In Latin America, communication is "more about mediations than media, more about processes than objects" and the "processes and practices of people's lived experiences with media form the backdrop to communication work" (Hoechsmann, 2019, p. 261).

(return to Glossary List)

Emirec

"Communicative model proposed by Cloutier (1973) to establish participant roles as both emitter and receptor of communication; "interlocutors maintain relations between equals and where all the subjects of communication are, at the same time, transmitters and receivers" (Aparici & Garcia Marin, 2018, p. 75). The term emirec represents a person who both encodes and decodes (emits and receives) media and communicated messages (Aparici & Garcia-Martin, 2018; Hoechsmann, 2019). This is contrasted to Toffler's (1980) conception of people as prosumers - producers and consumers, which has an economic or capitalistic stance (Aparici & Garcia-Martin, 2018) . Emirec is considered more closely connected to communicative endeavours (Hoechsmann, 2019). (return to Glossary List)

Episteme / Pronesis

Based on the philosophical traditions from Aristotle, episteme refers to "the discovery of knowledge; but not just any kind of knowledge ... true and certain knowledge" (Eisener, 2002, p. 375) that is universal, not local. Phronesis on the other hand refers to practical wisdom, knowledge that is contingent on subject matter, location, and reasoned thinking (Eisener, 2002). In education, particularly in the Faculty of Education (FoE) there is a push and pull relationship between these two beliefs about which form of knowledge is important. (return to Glossary List)

Faculty of Education (FoE)

Within higher education organizations in most jurisdictions in Canada, the study of teaching and learning is conducted in a faculty of education (FoE). These are sometimes or otherwise designated as colleges of education, teacher initiation programs, or education studies. In Canada, FoE fall under provincial jurisdiction and are thus funded and governed by provincial level departments. FoE programs run for one to two years, The FoE program includes specific subject content, structures, field experiences and partnerships (Kitchen & Petrarca, 2022) depending on provincial directives.

In Ontario, the FoE program is a requirement for certification from the Ontario College of Teachers (OCT) to teach in the K-12 jurisdiction. While "academies, and apprenticeship models

abound elsewhere, the legislative changes made by the province and the OCT reinforced the role of the university in teacher preparation while at the same time highlighting the importance of field experience" (Petrarca & Kitchen, 2017b, p. ix). (return to Glossary List)

#FemEdTech

The hashtag #FemEdTech stands for Feminist Educational Technology and emerged from a feminist perspective and activities relating to educational technologies. Foundational members created a website and activities that engage others from around the world. "*FemEdTech are a reflexive, emergent network of people learning, practising and researching in educational technology. We are an informal organisation with no funding: our resources are our passion, kindness, knowledge, enthusiasm and volunteer time" (FemEdTech website, n.d.).* (return to Glossary List)

Free and Open-Source Software (FOSS)

Free and open-source software (FOSS) is also named FLOSS by adding *libre* into the acronym to recognize the libre (free) nature of the materials. (Wikipedia, n.d.). FOSS can include non-proprietary technologies and software that enable users to examine, work with, and engage in efforts to improve the software or technology to benefit end users. The underlying codes for the software are "open for all and anyone is free to use, study and modify the code" (web search results). FOSS are considered not fully free since there are often hidden and human costs for production. Examples include software such as Linux operating systems, Apache open office, Python coding software, the Moodle learning management system, or GIMP graphics editor. People who work with FOSS are organized within semi-structured and unstructured communities where the leadership roles are granted according to skills and abilities as much as length of time in the community. The community structures are reminiscent of **affinity spaces** as defined by Gee (2015/2017). (return to Glossary List)

Homo faber

Homo faber is described by Thomas and Seely Brown (2009) as (hu)man as maker, stressing our ability as a species to make and create. In the world of digital technologies and teaching, this describes the "most important and transformational elements of the networked world and provides a unique set of affordances for understanding the relationship between new media and learning" (p. 8).

> *constitutes knowing as an embodied set of experiences that we create through our practices of being in the world and attending to things in the world through our experiences with them. To know something deeply is to understand the explicit dimension though our embodied engagement with its tacit dimension (Thomas & Seely Brown, 2009, p. 7)*

For this research and dissertation, the concept of **homo faber** is described as "creating an epistemology which is centered on *knowing* and *becoming*, rather than knowledge and being" (emphasis in original) (Thomas & Seely Brown, p. 7). A core premise of the concept of **homo faber** suggests that through the process of creation, humans develop understanding and

> *comprehend the world, not merely as a set of object, artifacts, or creations, but as coherent entities which we come to dwell in and which we make sense of the "jointness" and interconnection of the parts that constitute the whole, both at the explicit level of the object itself and at the tacit level in terms of its social context and relations. It is this level of tacit knowledge, that which is known, embodied and most importantly felt that begins to constitute a basis for a new understanding of learning (Thomas & Seely Brown, 2009,p. 8).*

(return to Glossary List)

Hupomnemata
As posited by Foucault (1983), hupomnemata forms an artifactual record of things individuals read, hear, or think, composing the shape and form of the self (Weisgerber & Butler, 2016). (Mewburn & Thomson, 2018) Mewburn and Thomson describe hupomnemata as a form of self-writing where academic blogs are forms of personal reflections, "a bricolage of diverse ideas, heterogeneous events and scattered readings" (p. 22) where posts are both notebook and/or correspondence. (return to Glossary List)

Interpretive Phenomenological Analysis (IPA)
Interpretive or hermeneutic phenomenology focuses on embodiment and being in the lifeworlds and intentions relating to a phenomenon, which is grounded in the philosophies of Heidegger, Merleau-Ponty, and Gadamer (Valentine et al., 2018). This shift in phenomenology from knowing to being resulted from Heidegger's ontological interest in how people give subjective meaning to phenomena. Interpretive phenomenology is thus not just concerned with consciousness, but in how lifeworlds constitute intelligible structures (Vagle, 2018) and how these meanings are revealed through language and discourse, thus emphasizing the intentionalities within people's stories as a form of sense-making (Tracy, 2020). (return to Glossary List)

Learning Management System
Learning management systems are software packages or platforms that afford the use of learning objects and processes designed to organize and distribute materials in the pursuit of learning. Examples include Coursera, Canvas, D2L Brightspace, and Blackboard. (return to Glossary List)

Makerspace
In education, makerspaces are generally thought of as places to explore tools, toys, and technologies to create and make innovative designs, inventions, and constructions. These spaces are both physical, often located in conjunction with a library or learning commons area, as well as cognitive, described as a maker-mindset focusing on problem solving. The iterative and collaborative nature of learning is often grounded in the activities provided and constructions generated within a makerspace (Lakehead University Library Research Guide, n.d.). (return to Glossary List)

Massive open online course (MOOC)
The term MOOC is prominent in open education contexts and stands for massive open online course(s). Originating in Canada in 2008, the term was framed by Dave Cormier in reference to an open online course developed by George Siemens and Stephen Downes (Weller, 2014). This term is best described by watching this video created by Dave Cormier. (return to Glossary List)

Media and Information Literacy (MIL)
Media and information literacy (MIL) is defined by UNESCO as a combination of the fields of media literacy and information literacy where knowledge, skills, and attitudes necessary for life and work come together. This term considers all forms of media and information provisions from libraries, archives, museums, education, and the internet. UNESCO outlines five laws of MIL which are intended to guide stakeholders to apply and develop MIL. As presented in the UNESCO archives, these include:

1. *Information, communication, libraries, media, technology, the Internet as well as other forms of information providers are for use in critical civic engagement and sustainable*

development. They are equal in stature and none is more relevant than the other or should be ever treated as such.
2. *Every citizen is a creator of information/knowledge and has a message. They must be empowered to access new information/knowledge and to express themselves. MIL is for all – women and men equally – and a nexus of human rights.*
3. *Information, knowledge, and messages are not always value neutral, or always independent of biases. Any conceptualization, use and application of MIL should make this truth transparent and understandable to all citizens.*
4. *Every citizen wants to know and understand new information, knowledge and messages as well as to communicate, even if she/he is not aware, admits or expresses that he/she does. Her/his rights must however never be compromised.*
5. *Media and information literacy is not acquired at once. It is a lived and dynamic experience and process. It is complete when it includes knowledge, skills and attitudes, when it covers access, evaluation/assessment, use, production and communication of information, media and technology content.* (return to Glossary List)

Open Education Practices (OEPr)
Broadly speaking, OEPr encompass: a) open sharing of learning and instructional design; b) collaborative development of open educational content and resources; c) open and accessible co-creation and delivery of learning activities; and, d) the application of shared peer and collaborative assessment and evaluation practices (Bozkurt et al., 2019; Cronin & MacLaren, 2018; Nascimbeni & Burgos, 2016; Paskevicius, 2017; Wiley & Hilton, 2018). This definition of OEPr is shaped by a philosophy about teaching that "emphasizes giving learners choices about medium or media, place of study, pace of study, support mechanisms, and entry and exit points, which are provided mostly with opportunities enabled by educational technologies" (Bozkurt et al., 2019, p. 80). (return to Glossary List)

Organization for Economic Co-operation and Development
The Organisation for Economic Co-operation and Development purports to work towards development of policies to better lives for global populations. Their 60 year history includes "establishing evidence-based international standards and finding solutions to a range of social, economic and environmental challenges" (OECD, n.d.). Read more about this organization on the About page of their website. (return to Glossary List)

Paywall
Paywall refers to the technological requirement of paying before entering a digital space. Sometimes the paywall collects personal information as a means of entry. In other cases users pay fees directly to the platform producer. In yet other cases, such as library access to academic journals, are kept behind closed walls, pending payment to the university, through registration fees or from the university to the journal distributors. (return to Glossary List)

Platforms
In computer and technology, platforms refer to hardware or software serving as a foundation or base. Hardware platforms refer to the operating systems used for computers or mobile hardware e.g. Windows, Mac OS, Android, iOS. Software platforms are applications that host other software or user options. Nichols et al., (2021) refer to platforms as: (1) infrastructures on which applications are built (e.g. a video game console is a platform for playing its compatible software); and (2) online networks that facilitate economic and social exchanges (e.g. a social media site is a platform for connecting with others)" (p. 345). (return to Glossary List)

Portable Document Formats (PDF)
PDF refers to portable document formats and is the world-wide standard for electronic document publication. This format standardizes the reading and formatting options when sharing documents, keeping fonts, images, and spacing in consistent locations on the 'page' of the electronic document. Developed in the early 1990s, this format for document publication can be created from many other text or image production software programs but requires proprietary Adobe software for editing and revision (*Definition of PDF*, n.d.). While still frequently used in educational contexts, particularly for article publication and reading, for the purposes of open educational practices the PDF format is contentious as it is not considered as fully open when developed as an OER since it cannot be easily revised. (return to Glossary List)

Portable Network Graphic (PNG)
PNG stands for which is a consistent and standardized file format designation used for images that was developed to replace GIF formats due to legal issues. This format is accepted by the World Wide Web Consortium, making it recognizable and used globally (*Definition of PNG*, n.d.) The images in this dissertation are stored and shared in PNG format. (return to Glossary List)

Post-Intentional Phenomenology (P-IP)
Post-intentional phenomenology (P-IP) is a qualitative research framework and methodology grounded in ontologies from Derrida, Deleuze and Guattari, as well as Foucault. This approach to phenomenological research focuses on the reciprocal nature of subject and object. Researchers are immersed in the research rather than bracketing or bridling their perceptions of the research. Researched by Ihde, Vagle, Verbeek, and Hosess, the nature of 'through-ness' (Vagle, 2018) is explored. Research characteristics include entanglements, dogged questioning, hyphenated tension, flux and fluidity described as lines of flight, reflexivity, and bearing witness (see Figure 1). (return to Glossary List)

Practice
When used as a noun, practice is the thing, the ideas, beliefs and methods that encompass the performances, executable sequences, the operations that make up the thing called teaching. This refers to the totality of the habitual doing and carrying on of something that constitutes the established routines and procedures of teaching. When used as a verb, a teaching practice is exercising, the actions of doing the moves that encompass the thing called a teaching practice. It is the repeated activity and skills that individuals acquire or enact to maintain or improve their proficiency of the teaching actions (OED Online, 2023) (return to Glossary List)

Technological, Pedagogical, Content Knowledge (TPACK) framework
TPACK refers to the technological pedagogical content knowledge (TPACK) evident in a teacher's investigations, applications, and practices. For Canadian TEds, this framework outlines the "complex interplay of three primary forms of knowledge" (Koehler, 2012, paragraph 2). According to Koehler (2012) this framework suggests that "effective technology integration for pedagogy around specific subject matter requires developing sensitivity to the dynamic, transactional relationship between these components of knowledge situated in unique contexts" (Koehler, 2012, paragraph 3). Image reproduced by permission of the publisher, © 2012 by tpack.org. (return to Glossary List)

Research Ethics Boards (REB)

In Canada, each university has a research ethics board that oversees the approval of all research conducted, ensuring that researchers follow the expected guidelines established by the Tri-Council Policy Statement on Ethical Conduct for Research (see Tri-Council Policy in glossary). The Canadian Association of Research Ethics Board was established in 2000 with a focus on REB professionals to share practices and work together during challenging times, with the aim of improving the visibility and credibility of REBs across Canada. REB documentation is usually included in research outputs as verification of approval (see Appendix A). (return to Glossary List)

Safety, Security, Privacy, Permissions
These elements are essential to the use of technologies, particularly those connecting to or part of the world wide web. Both cognitively and socially, these are part of the necessary considerations for the use of technologies in education, not only for TEds, but for their students. While these may considered from a protectionist view where younger children are involved, when working within higher education these elements become part of the skills, fluencies and competencies required when becoming data and technological literate. (return to Glossary List)

Social Sciences and Humanities Research Council (SSHRC)
SSHRC is one of the three (Tri-Council) federally funded agencies promoting and supporting research and training, specifically managing all areas relating to the humanities and social sciences. Funding awards and research outputs are conducted through such development opportunities as Insight grants, Canada research chairs, and the New Frontiers in Research fund (Government of Canada, 2012). See more on this SSHRC video.
(return to Glossary List)

Teacher Candidates (TCs)
Teacher candidates are the students in the faculties of education, working learning to become teachers in K-12 classrooms. In some research they are alternatively referenced as teachers-in-training or pre-service teachers. (return to Glossary List)

Teacher educators (TEd / TEds)
Teacher educators are individuals who are tasked with teaching in a faculty of education. Foulger et al., (2017) defined teacher educators as someone within higher education institutions who provide instruction, giving guidance and support to teacher candidates. Heldens (2017) described TEds as a mixture of those with/without academic backgrounds, having a widely ranging numbers of years of experience in either the field of education or teacher education, and those with ranges of experience in K-12 education. (return to Glossary List)

Teacher educator technology competencies
As researched by Foulger et al., (2017), the teacher educator technology competencies outline characteristics, skills and fluencies required for teacher educators to transform their teaching practices and support modern learning techniques for teacher candidates and professional development courses. The impetus for the development of the competencies came from the U.S. National Technology Plan (2017) and emphasized the "roles and responsibilities of teacher educators who address technology in their courses". These include:

- Design instruction with tech
- Incorporate pedagogical approaches with tech
- Develop knowledge, skills and attitudes to use tech; teach with tech
- Use online tools to enhance teaching & learning

- Use tech to differentiate to meet diverse needs
- Use tech for assessment
- Model effective strategies for online, hybrid, blended learning
- Use tech to connect globally and locally
- Address legal, ethical and socially-responsible use of tech
- Engage in ongoing PD/PL and networked activities to improve use of tech
- Engage in leadership and advocacy for use of tech
- Apply troubleshooting skills to resolve tech issues (hardware & software)

(return to Glossary List)
Each of these can be viewed in more detail in this H5P interactive learning object - https://h5pstudio.ecampusontario.ca/content/22022

Tri-Council Policy Statement (TCPS-2)
From the website, the Tri-Council is described: "In 2001, Canada's three federal research agencies, CIHR, NSERC and SSHRC, jointly created the Interagency Advisory Panel on Research Ethics (the Panel) as part of a collaborative effort to promote the ethical conduct of research involving human participants. The Panel develops, interprets and implements the *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans* (TCPS)" (Interagency Advisory Panel on Research Ethics, 2016). (return to Glossary List)

UNESCO
The United Nations Educational, Scientific and Cultural Organization (UNESCO) is an international organization of member countries that sets out policies and directions for improvement in many fields of endeavour, not the least being teacher education and media/digital literacies. Some of the core documents used for this research are included in the reference listing. Recent work relates to issues resulting from the global pandemic and the impact on the education sector. (return to Glossary List)

Uniform Resource Locator (URL)
Refers to the uniform resource locator which is a web-based address that determines the route to a file on an internet service such as a web page or web-accessible file. The locator information includes a "protocol prefix, port number, domain name, subdirectory names and file name" (*Definition of URL*, n.d.). For this dissertation, each individual page, image, or part of the document has a unique URL to locate the information, some resident within the Scalar platform but others link to external web-based locations. (return to Glossary List)

Universal Serial Bus (USB)
USB is a standardized computer hardware format for attaching external items such as keyboards, external storage drives, or printers to a computer or laptop. USB ports, cords, and devices became standardized in the 1990s and are named with letters or numbers to indicate the socket type and speed (*Definition of USB*, n.d.). (return to Glossary List)

Visitors /Residents
This framework was developed by White and Cornu, 2017 as a way to explore relationships people have with/within digital environments, platforms and technologies. This typology used the metaphor of a neighbourhood, where you may 'visit' or where you are fully engaged as a 'resident' of that space. Visitors are described as needing to view concrete benefits from platform use, and not likely to have a persistent online profile within digital spaces. Visitors are "users, not members, of the Web and place little value in belonging online" (paragraph 22).

Residents easily navigate within online spaces, spend time with others, are likely to belong to online communities, and have social platform profiles (White & Cornu, 2017). The difference between visitors and residents is platform dependent, a flexible continuum based on purpose and need, and impacted by "factors such as conceptions of privacy and the notions of friendship" (paragraph 29). (return to Glossary List)

Appendices

Appendix A

Research Ethics Approval Letter

Research Ethics Board
t: (807) 343-8283
research@lakeheadu.ca

November 26, 2021

Principal Investigator: Dr. Michael Hoechsmann
Student: Mrs. Helen DeWaard
Education (Orillia)
Lakehead University
Orillia Campus
500 University Avenue
Orillia, ON L3V 0B9

Dear Dr. Michael Hoechsmann and Helen:

Re: Romeo File No: 1468956

On behalf of the Research Ethics Board, I am pleased to grant ethical approval to your research project titled, "Critical media and digital literacies in Canadian teacher educators' open educational practices: A post-intentional phenomenology".

Ethics approval is valid until November 26, 2022. Please submit a Request for Renewal to the Office of Research Services via the Romeo Research Portal by October 26, 2022, if your research involving human participants will continue for longer than one year. A Final Report must be submitted promptly upon completion of the project. Access the Romeo Research Portal by logging into myInfo at:
https://erpwp.lakeheadu.ca/

During the course of the study, any modifications to the protocol or forms must not be initiated without prior written approval from the REB. You must promptly notify the REB of any adverse events that may occur.

Best wishes for a successful research project.
Sincerely,

Dr. Claudio Pousa
A/Chair, Research Ethics Board

/sa

Appendix B

Communication with Participants

B.1 Initial Contact – email

Insert date.
Dear (Insert participant name),
My name is Helen DeWaard. I am a PhD candidate in the Joint PhD program in the Department of Education at the universities of Brock, Lakehead and Windsor, Ontario in the field of Cognition and Learning.
I am reaching out to you to invite you to participate in a study which explores teacher educators' lived experiences with media and digital literacies from the perspective of an open educational practitioner in a Faculty of Education in Canada. This research project titled Critical media and digital literacies in the open educational practices of Canadian teacher educators: A post-intentional phenomenology is being conducted as part of my PhD research in the field of education.
In conducting this research, I am hoping to better understand how OEPr are impacted by critical media and digital literacies in teacher education, but also gain understanding in how open practices can be defined from a teacher educator's lived experiences. This research may enhance current knowledge about the lived experiences of teacher educators in the acquisition and application of media and digital literacies within the field of teacher education in Canada. Since the onset of the pandemic, the need for media and digital literacies has been a prominent concern and this research will benefit all those who are currently teaching on Canadian faculties of education, and potentially for teacher educators in faculties of education globally.
Taking part in this study is voluntary. Before you decide whether or not you would like to take part in this study, please read the attached Letter of Information for Research Participation carefully to understand what is involved. After you have read this information letter, please ask any questions you may have.
If you agree to participate, please RSVP and an informed consent form will be emailed to you. Please RSVP or send questions by email.

Sincerely,
Helen DeWaard
Lakehead University, Faculty of Education, Joint PhD student

B.2 Letter Before Informed Consent

Dear Potential Participant:
My name is Helen DeWaard. I am a PhD candidate in the Joint PhD program in the Department of Education at the universities of Brock, Lakehead and Windsor, Ontario in the field of Cognition and Learning. You are invited to participate in a study which explores teacher educators' lived experiences with media and digital literacies from the perspective of an open educational practice (OEPr) in a Faculty of Education in Canada. This research project titled Critical media and digital literacies in the open educational practices of Canadian teacher educators: A post-intentional phenomenology is being conducted as part of my PhD research in the field of education.

Taking part in this study is voluntary. Before you decide whether or not you would like to take part in this study, please read this letter carefully to understand what is involved. After you have read this Letter of Information for Research Participation, please ask any questions you may have.

Purpose and Objectives

From my role as an instructor in a faculty of education and applying a teacher educator's lens, I want to hear the stories of teacher educators who openly share, specifically how media and digital literacies impact or shape open educational practices (OEPr). The purpose of this research project is to explore the lived experiences with acquiring and applying media and digital literacies as a teacher educator who participates in OEPr. In conducting this research, I am hoping to better understand how OEPr are impacted by critical media and digital literacies in teacher education, but also gain understanding in how open practices can be defined from a teacher educator's lived experiences.

This research will enhance current knowledge about the lived experiences of teacher educators in the acquisition and application of media and digital literacies within the field of teacher education in Canada. Since the onset of the pandemic, the need for media and digital literacies has been a prominent concern and this research will benefit all those who are currently teaching on Canadian faculties of education, and potentially for teacher educators in faculties of education globally.

I define open educational practices as collaborative pedagogies utilizing digital technologies and authentic learning encounters for "interaction, peer-learning, knowledge creation, and empowerment of learners" (Cronin, 2017, p. 18). In other words, as a teacher educator, you will individually or collaboratively select open educational practices to support your ways of knowing, designing, planning, and assessing teaching and learning events (Cronin, 2017; Nascimbeni & Burgos, 2016; Paskevicius, 2017; Roberts, 2019).

The study is framed by the following research questions:

- What does it mean to be media literate and digitally literate as a teacher educator? What are the lived experiences as a teacher educator with media and digital literacies (MDL)?
- As a teacher educator in Canada, what is it like to be an open educator? What are the lived experiences as a teacher educator who participates in open educational practices (OEPr)?
- How do media and digital literacies inform or shape the work of a teacher educator immersed in open educational practices?
- What is the lived MDL and OEPr experiences of teacher educators, as evidenced in the ethos and stories of their teaching practice?

Participant selection: As a potential participant, you are being asked to join in this study because you are within my known networks, through your research and scholarly works, and/or have been recommended through a snowball sampling. Your participation fits the criteria for this research because you are currently working, or have worked within the past five years, as a teacher educator in a Canadian faculty of education. During the initial contact and after returning the signed consent, you will be asked to share and confirm your active involvement in open educational practices. These may be evidenced through your open engagement and/or participation in any of the following: social media accounts, blog site, web available course materials such as syllabi and/or course website(s), and openly accessed web publications.

What is involved? If you consent to voluntarily participate in this research, your participation will include:

- Phase One: Participating in one semi-structured interview. This will be an individual interview lasting approximately 45-60 minutes in length. This will be an opportunity to share and respond to several open-ended questions regarding lived experiences with media and digital literacies and your open educational practices as a teacher educator. The interview protocol and conversation prompts will be sent to you in advance of the interview. For this interview, conducted online using Zoom video conferencing software, you will need access to a microphone and speakers to communicate in this environment. I welcome participants to make use of a webcam as well, but this is optional as video during the interviews is not essential in this research. I will be recording the audio and/or video of the interview for transcription and analysis. The transcription and subsequent graphic rendering and/or mapping of the text will be returned to you for review, which may result in a deeper reflection for the Phase Two activity.

- Phase Two: At the end of the interview, I will ask you to reflect on one or two frameworks for media and digital literacies that are reflective of your teaching practices as a teacher educator. Links to a range of possible frameworks will be provided to you following the interview. You are then asked to prepare and subsequently share a professional reflection about media and digital literacies within your OEPr, using any media-making technology of your choosing. In this way, creative 'storying' about your media and digital literacy experiences will be revealed. This could take 2-3 hours of time. In this media artifact, your metacognitive reflections may uncover deeper insights into your media and digital literacies as revealed in your open educational practices.

As a researcher, I will review and analyze social media account contributions – those that you will identify to me during the interview and verify as examples of media and digital literacies and your open educational practice. More specifically, this will include your web publications that could be considered to be relevant to this research. This monitoring and analysis will be done for a two-week period following the interview. I will also review any course syllabi you are willing to share. You are welcome to submit any additional web resources or artifacts that you feel would be useful for this study. This information may reveal connections and applications of media and digital literacies of which you may be unaware. When this information is returned to you for review, this may result in deeper understanding of the impact of MDL in your open educational practices.

Risks

The study risks are minimal, although you may potentially feel some discomfort answering questions during the interview or preparing the phase two reflection. This discomfort is anticipated to be minimal and temporary. Any emotional or psychological harm is anticipated to be minimal since topics being discussed are not sensitive or invasive. This potential harm will be mitigated by providing alternative questions or topics that minimize discomfort, and by ensuring that you are informed that you can withdraw at any time during the data collection phase of this research.

Because the interview, transcription, and email communication will be conducted using digital tools, there is no guarantee that the data will not be intercepted by others, although this is unlikely since I will consistently use VPN protocols when using internet-based platforms.

This research will not place you in breach of relevant law. Any potential breach of relevant laws, such as a potential breach of copyright regulations, which you may reveal during the interview and data gathering, will be held in strictest confidence and not be explicitly revealed in the research dissemination.

Potential harm to your professional reputation and your data privacy will be minimized by the use of pseudonyms and digitally created avatar images that will be attached to any reported data and information. Where the data may potentially be identifiable, since specific details you share may be readily available and searchable on the internet, this will be further anonymized and aggregated to prevent potential recognition.

Benefits

The potential benefit to you as a participant could be that you gain greater awareness of the field of media and digital literacies in general, as well as some of the frameworks that identify skills and competencies within media and digital literacy acquisition. This research may also benefit you in gaining personal and professional awareness of your professional skills, fluencies, and competencies within the areas of media and digital literacies, as well as insights into how these influence your open educational practice.

Further to this personal and professional benefit that you may gain, this research may benefit others who are currently teaching in faculties of education by identifying areas of professional growth, and for leaders in faculties of education to identify potential areas of professional development for new and current faculty members.

This research may additionally contribute to the growing body of work in the area of open educational practices within teacher education. This research can potentially identify issues and benefits of acquiring media and digital literacies that may advance the work of those who teach and learn within open educational contexts in higher education.

Rights of Participation

You are under no obligation to participate, and are free to withdraw at any time during the data collection phase, without prejudice to pre-existing entitlements. Your decision to participate will not affect your academic status or employment. You will be given, in a timely manner throughout the course of the research project, information that is relevant to your decision to continue or withdraw from participation. You will be given information on your rights as a participant to request the withdrawal of data, including any limitation on the feasibility of that withdrawal, should it be requested after the data collection phase is completed.

Compensation

As a way of recognizing your gift of time for this research and to acknowledge any inconvenience related to your participation, you will be offered a $25 Chapters/Indigo gift card, should you complete any or all parts of the outlined research phases. If you consent to join in this study, this form of compensation must not be considered coercive or as payment for your time.

Confidentiality and Anonymity

Your reputation and privacy will be protected by the use of pseudonyms and digitally created avatar images that will anonymously represent any reported data, artifacts, and information. This will ensure anonymity of your contributions within publications emerging from this research, including the dissertation document. Since your identity will be known to me, as the researcher, the information you share during this research will be held in the strictest of confidence. Where the data may potentially be identifiable beyond anonymity, since specific details that you may share could be readily available and searchable on the internet since you are sharing your open education practices, data will be further anonymized through de-identifiable word usage and the aggregation of information, to prevent potential recognition.

Should you wish to have your identity revealed in the research publication and dissemination, an additional consent form will be provided in order to acquire your informed and written permission. This will be collaboratively written to include your specific preferences and will explicitly outline the precise criteria, constraints and considerations of this open contribution to research.

Access to Information and Publication of Results

As this is part of my PhD research, you should be aware that the research data and the analysis information will be discussed and potentially shared with my dissertation committee, as part of their monitoring and support of this research endeavour. Primary publication of research results will be done within the final dissertation submission and pending the PhD defence presentation. Subsequent publication of research results will be done in peer reviewed journals, web publications, and social media locations. Confidentiality and anonymity will be maintained within any future publications emerging from this research.

During the research phases, the storage of data and information will be located on my password protected laptop and a password protected and encrypted external storage device. Upon completion of this research, the data and information will be stored on a password protected and encrypted external hard drive, stored in a secure location at Lakehead University, Faculty of Education, Orillia, Ontario for a period of five years.

Consent

Your informed consent to join in this research is completely voluntary and can be withdrawn at any time during the data collection phase. I have prepared a short video as a way to introduce myself and provide information about this research project [link to video: https://stepbystep.hjdewaard.ca/blog/recruitment-and-informed-consent/]. Once you have reviewed the video and this documentation and are willing to participate you are asked to kindly email to request an informed consent for participation form. Additionally, and subsequent to the signed consent being returned, I will review the consent form with you at the time of the interview.

Prior to recording the interview, I will seek your verbal consent to record the interview, as well as remind you that you can opt not to answer any of the questions or withdraw from the interview at any time. I will store the interview recording and transcription on my own password secure laptop. The interview transcript and subsequent data information will be handled with anonymity and shared back to you for review.

Should you not wish to participate, no further action is required, and you will not be contacted further. As a participant, you can withdraw from this research at any time during the data collection phase, either by email or phone call, or during the interview. If they do withdraw, any information collected will be removed from consideration in this research, if done prior to the report writing phase of the dissertation process.

An informed consent form will be emailed and can be returned by email. Questions about this research can be directed as outlined below.

Contact Information:

Helen DeWaard can be contacted at any time by email [redacted], by direct message on Twitter [redacted], or by phone at [redacted].

This research is being conducted under the supervision of Dr. Michael Hoechsmann, Associate Professor, Lakehead Faculty of Education, Orillia. You may contact my supervisor by email at [redacted].

This research study has been reviewed and approved by the Lakehead University Research Ethics Board. If you have any questions related to the ethics of the research and would like to speak to someone outside of the research team, please contact Sue Wright at the Research Ethics Board at 807-343-8283 or research@lakeheadu.ca.

Sincerely,
Helen DeWaard
Lakehead University, Faculty of Education, Joint PhD student

B.3 Post-Interview Contact - email

Hi xx,

I can't thank you enough for adding your voice to this research. I've listened to our interview twice now and continue to hear 'anew' some of the insights you've provided.

I have attached the transcript which included some key words, a link to the audio version of the interview, and the word cloud that was generated from this transcript. The interactive version of the word cloud will be available for the next two weeks in case you want to take a closer look.

As a follow-up, I'd like you to reflect on your media and digital literacies potentially in relation to elements in any of the frameworks that can support your reflections, and then create an artifact that may focus on your open educational practice. You can select one or more of the frameworks here, or pull ideas from any of these frameworks that you feel are representative of your ***lived experiences*** with media and digital literacies in your open educational practices.

- Media Smarts digital literacy framework (Canadian)
- Media Triangle from Association for Media Literacy (Ontario) (graphic https://aml.ca/wp-content/uploads/2019/10/triangle1.pdf)
- ISTE (International Society for Technology in Education) - digital citizenship framework by Mike Ribble (2021) (US based)
- European Framework for the Digital Competence of Educators: DigCompEDU - pdf (European context)
- Five Laws of Media and Information Literacy - MIL Five Laws (infographic from UNESCO)
- MIL in teacher development - Framework (UNESCO).

If you have any additional thoughts or want to respond to that provocation from the interview when I shared the media triangle, please share them in any way you wish (text, audio, video, image, graphic) or just email me any thoughts!

So, if you could create and share your digital artifact within the next two weeks, depending on your schedule, that would be great. **I'll set a 'soft deadline' for xx date** and will send a reminder at the end of next week in case you need one.
Looking forward to this reflection.
Helen DeWaard

Appendix C

Informed Consent Form

Insert date.
Dear (insert name here).
Informed Consent
Your consent to participate in the study titled ***Critical media and digital literacies in the open educational practices of Canadian teacher educators: A post-intentional phenomenology*** is completely voluntary and can be withdrawn at any time up to and including the data collection phase of this research. I have prepared a short video as a way to introduce myself and provide

information about this research project [link to video: https://stepbystep.hjdewaard.ca/blog/recruitment-and-informed-consent/].
Once you have reviewed the video and the Letter of Information for Research Participation documentation, and are interested in participating, kindly return the signed informed consent for participation via email to me at hdewaard@lakeheadu.ca. Subsequently, I will review the consent form with you at the time of the interview.
To indicate your informed consent, please initial each of the statements below, then sign and date the letter before returning it by email.

- I have read and understood the information for the study as provided in the Letter of Information for Research Participation documentation and as outlined in the video information about this research project.
- I agree to participate in phase one of the research [interview].
- I agree to participate in phase two of the research [reflective artifact production].
- I understand that I am a volunteer and can withdraw from the study at any time, and may choose not to answer any question.
- I understand the potential risks and/or benefits of the study, and what those may mean for my open educational practice.
- I understand that the interview will be video recorded and transcribed using web applications.
- I understand that the interview transcript and subsequent media artifact, as well as the research findings, will be made available to me. These will be emailed along with any URL links to be shared in order to communicate the research analysis and outcomes.
- I understand that my research data and analysis may be shared with the PhD candidate's supervisor and committee members for the purpose of monitoring and guidance.
- I understand that the data I provide will be securely stored at Lakehead University for a period of five years.
- I understand that I can receive a summary of the project, upon request, following the completion of the project, by calling or emailing for a copy.
- I understand that my participation will remain anonymous in any publications or public presentations of research findings unless I explicitly agree to have my identity revealed.
- Revealing my identity will follow the explicit conditions and parameters agreed to in writing prior to web or presentation publication.
- I acknowledge, that by consenting to participate, I have not waived any rights to legal recourse in the event of research-related harm.

YES / NO (circle or highlight one) - I have read and agree to the above information and by completing and submitting this letter, agree to participate.

YES / NO (circle or highlight one) - I will provide written permission for the allowance of identification of my participant as warranted and directed.
YES / NO (circle or highlight one) – I agree to the audio/video recording and subsequent transcription of the interview for the purposes of this research.
Name:
Signature:
Date:
eMail: *(if different than the one where you received the recruitment information and informed consent form).*

Contact information: Helen DeWaard can be contacted at any time by email [redacted], by direct message on Twitter [redacted], or by phone at [redacted].
This research is being conducted under the supervision of Dr. Michael Hoechsmann, Associate Professor, Lakehead Faculty of Education, Orillia. You may contact my supervisor by email at [redacted] or by phone at [redacted].

Questions about the research ethics approval: Sue Wright, Research Ethics Board, Lakehead University, Thunder Bay. swright@lakeheadu.ca 807-343-8283

Appendix D

Interview Protocol

Introduction and Procedural / setup

I'd like to begin with introductions and extending my thanks for your participation in this research.

- Welcome to this digital interview space. I'd like to start by thanking you to consent to participate in my research. As a teacher educator, your voice matters and your experiences are important. I hope this research will provide you with an opportunity to share your unique perspectives on open educational practices with a focus on your lived experiences of becoming media and digital literate.
- Thank you for signing and returning the consent form. Did you have an opportunity to watch the brief video I prepared as a way to welcome you to this research? Do you have any questions before we begin the interview?
- You are reminded that you can withdraw from this research at any time. If you do decide to withdraw, your data and information will be deleted and not considered for the final research dissertation report or future publication.

a) Warning and begin recording (audio and video)

- This interview will be recorded, with the audio and video becoming part of the data gathering that will inform this research. Do you consent to the recording of today's interview?
- As part of my commitment to you as a participant in this research, you will be provided with a full transcript of this interview, as well as a graphic rendering of the transcript that I will create using word cloud software and concept mapping software. You are also able to withdraw from this research and this interview at any time.

1. Personal Background
    a. I'd like to get to know a bit about you as a teacher educator in Werklund School of Education and the University of Victoria faculties of education. Can you please briefly describe your academic career as a faculty member such as your years of teaching, institutions where you have worked, and/or your speciality areas as a teacher educator.
    b. Tell me a little bit about the context in which you teach i.e. describe the courses you teach, the classrooms, the lived experience of teaching?
    c. Describe any other relevant professional experiences that would help me understand your professional background that influences your open educational practice (which we will explore in the next part of the interview).

- Alternative prompt: Could you please tell me your story about your experiences thus far as a teacher educator at [name of university] (Mian, 2007).

2. Open Educational Practices

I'd like to focus now on your open educational practices as a teacher educator. One of the reasons you have been approached to participate in this research is for the evident nature of sharing your educational practices in social media and comments or connections to the field of open education.

a. Can you share and confirm for me a brief list of the spaces and places where your open educational practices could be evidenced? e.g. blog, Twitter, Instagram, Facebook, Linkedin, Academia, Research Gate, ORCID, Google Scholar
b. Can you tell me a little bit about your interest in the open education?
c. How would you define or describe your open educational practice?
d. Can you describe any of the people, events, or other writing that has influenced your open educational interests and/or commitment to open educational practice?
e. How has the field of open education shaped your teaching practice?
f. From your lived experiences in open education, what are some of the core assumptions, beliefs, guiding philosophies and/or theories that inform your open educational practices?
g. What do you believe are some of the essential core tenets or non-negotiable aspects that constitute open educational practices?

- Alternative prompts: How might you define or describe your open educational practices? In what ways does your teaching and learning model open educational practices?

3. Media and Digital Literacies

Let's focus next on the area of media and digital literacies, since you've mentioned a few items relevant to MDL in your previous responses.

a. Can you talk a bit more about what you mentioned earlier?
b. When and how have you developed your media literacies? Your digital literacies?
c. How would you describe your media and digital literacy experiences with focus on what key elements of media and digital literacies are important or critical in your OEPr.
d. Describe your lived experience in weaving these MDL into your OEPr.

- Alternative prompts: How might you define or describe media literacy? How might you define or describe digital literacy? In what ways does you teaching and learning include media and digital literacies?

4. Challenges and Barriers to MDL within OEPr

You've mentioned a few things in your responses about the challenges you've faced and some of the barriers you've encountered in your teaching as they relate to MDL and OEPr.

a. Can you tell me a bit more about ….. that you mentioned earlier.
b. How have these challenges and barriers influenced your MDL? Your OEPr?
c. Describe a bit more about your lived experiences and potentially some of the negotiations you've made in your MDL that have shaped your OEPr.

5. Do you have any additional thoughts or questions as a result of this interview?

Concluding the Interview

I really appreciate the time you have taken to share your story, your lived experiences in MDL and OEPr with me. I'd like to give you the opportunity to think about this interview and take a moment if there is anything you would like to revisit or anything else you'd like to add.
If not, I'd like to thank you for spending time and sharing your story with me. In recognition and being very aware of the value of this time, I'd like to offer you a $25 Chapters / Indigo gift card that will be emailed to you in the next week.

As a followup to this interview, I hope you will take another hour or two in the coming weeks, to reflect on your MDL within your OEPr in light of a few frameworks that outline elements of

MDL and OEPr. I will forward some possible MDL and OEPr frameworks to you by email following this interview.

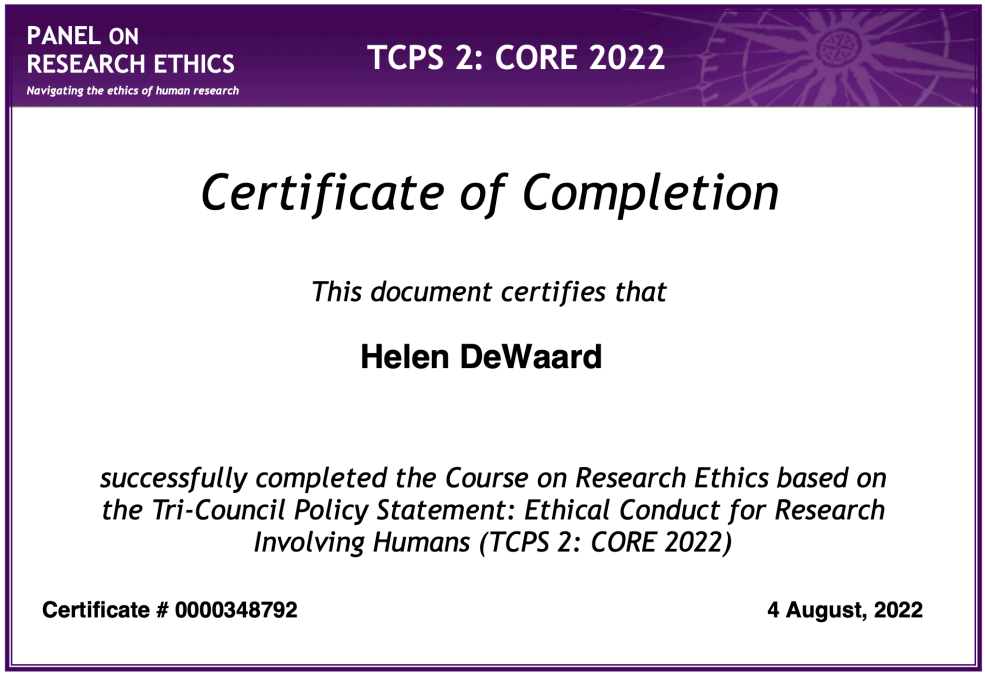
Within two weeks from today, I hope you can return to me a personal and/or professional reflection about your MDL within your OEPr as informed by these frameworks. This reflection can take the form of any media production of your chosing – a written reflection, graphic rendering such as an image or infographic, an audio response, or a video production. The focus of this reflection should be on your lived experiences of MDL within your OEPr. This reflection will allow me to envision your story of becoming media and digitally literate and becoming an open educational practitioner. This reflection will add to the data gathering for this research. Also, in the coming days, I will email you a summary transcript of this interview along with a graphic rendering of the transcript, done as either a word cloud, a concept map, or both (if time permits). This will give you some time to review the transcript for accuracy and ensure I have a correctly captured the story of your lived experiences. This may also help you in the reflection artifact that I'm asking you to create.

I'll also remind you that you can withdraw from this research at any time and you can request that any information you have provided can be removed from this research, prior to the final dissertation report writing of the findings. Please let me know by email or phone call, if you would like to withdraw your participation.

Do you have any final questions or comments? If not, again, thank you so very much for your participation in this research. I hope that together we can illuminate the MDL that teacher educators apply to their OEPr. I look forward to seeing your reflection artifact.

Appendix E

TCPS 2 Core Certification (2022)



PANEL ON RESEARCH ETHICS
Navigating the ethics of human research

TCPS 2: CORE 2022

Certificate of Completion

This document certifies that

Helen DeWaard

successfully completed the Course on Research Ethics based on the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS 2: CORE 2022)

Certificate # 0000348792 **4 August, 2022**

Appendix F

List of Tools and Technologies Mentioned in Data Gatherings

Amazon
AR/VR
Blockchain
Blogs
Canada robotic arm
Canva
Chromebooks
Coding – Scratch; Python Links; Code to learn
Concept mapping – shared/ collaborative
Creative Commons
DAO – distributed decentralized organization
Discord; Discord server
Dreamweaver
Dropbox
Facebook
Flickr
Flipgrid
Enlight Photofox
gaming systems
GarageBand
Google – docs
- Google Plus
- Wave
- Classroom

H5P
Hindenburg podcast hosting
HTML
Hyperdeck / Hypercard
Hypothes.is
Infographics
Inksmith
Instagram
iPad
iPod
Learning Management System
- D2L – Desire to Learn / Brightspace
- Canvas
- Blackboard / WebCT
- Moodle

Linked In
Linux
Microsoft
- Windows
- Teams
- Minecraft

MOOCs
Novell network (Connected Canada Initiative)
Obsidian
Open ETC project
- Mattermost
- SPLOT
- Clone it to own it

OWL camera
Padlet
Pathfinder
Photoshop
Plurk
Pong
Research locations
- Academia.edu
- Google scholar
- Research Gate

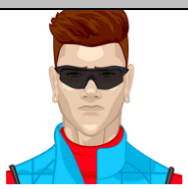
Research tools
- EndNote
- Zotero

Roblox
Scarfe Digital Sandbox
Scratch
Slack
Spotify
Teachers Pay Teachers (TPT)
Tik Tok
Trello
Twine
Twitter
- Course hashtag

Video editing
Webboard
Word cloud generator
Wordpress
Yammer
YouTube
ZenCaster
Zoom

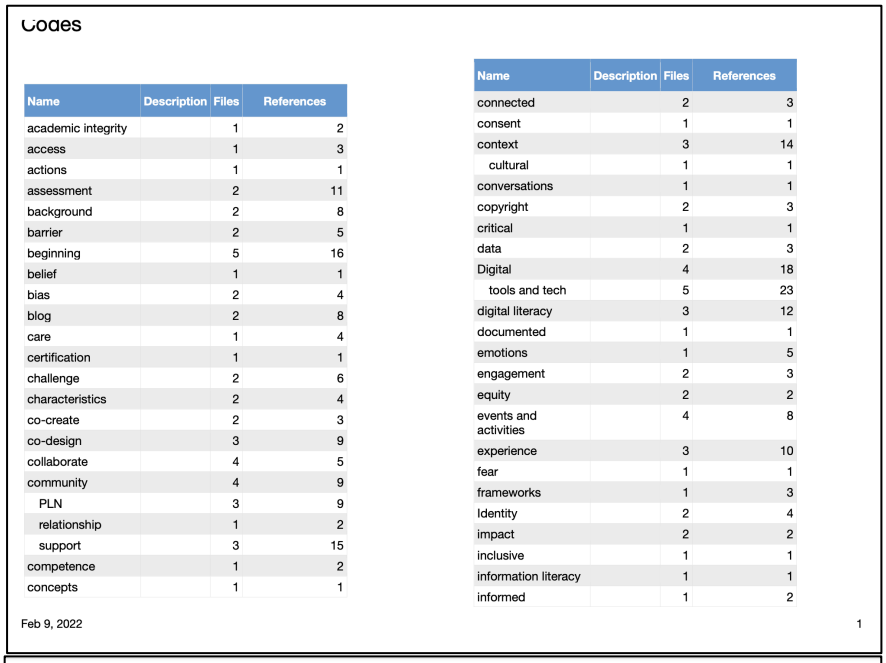
Appendix G

List of Participants' Randomized Initials and Avatar Images

Avatars and Pseudonyms in Alphabetic Order			
			
Andromeda	Aquila	Carina	Dorado
			
Izar	Leonis	Lyra	Merak
			
Orion	Perseus	Polaris	Rigel
			
Sabik	Vega		

Appendix H

H.1 Codebook (Feb 9, 2022)

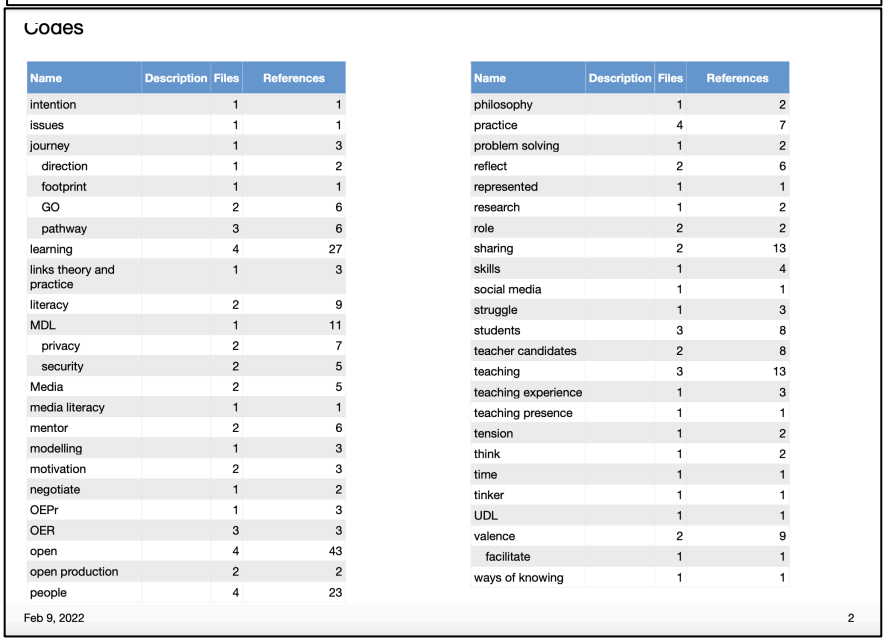


Codes

Name	Description	Files	References
academic integrity		1	2
access		1	3
actions		1	1
assessment		2	11
background		2	8
barrier		2	5
beginning		5	16
belief		1	1
bias		2	4
blog		2	8
care		1	4
certification		1	1
challenge		2	6
characteristics		2	4
co-create		2	3
co-design		3	9
collaborate		4	5
community		4	9
PLN		3	9
relationship		1	2
support		3	15
competence		1	2
concepts		1	1

Name	Description	Files	References
connected		2	3
consent		1	1
context		3	14
cultural		1	1
conversations		1	1
copyright		2	3
critical		1	1
data		2	3
Digital		4	18
tools and tech		5	23
digital literacy		3	12
documented		1	1
emotions		1	5
engagement		2	3
equity		2	2
events and activities		4	8
experience		3	10
fear		1	1
frameworks		1	3
Identity		2	4
impact		2	2
inclusive		1	1
information literacy		1	1
informed		1	2

Feb 9, 2022 1



Codes

Name	Description	Files	References
intention		1	1
issues		1	1
journey		1	3
direction		1	2
footprint		1	1
GO		2	6
pathway		3	6
learning		4	27
links theory and practice		1	3
literacy		2	9
MDL		1	11
privacy		2	7
security		2	5
Media		2	5
media literacy		1	1
mentor		2	6
modelling		1	3
motivation		2	3
negotiate		1	2
OEPr		1	3
OER		3	3
open		4	43
open production		2	2
people		4	23

Name	Description	Files	References
philosophy		1	2
practice		4	7
problem solving		1	2
reflect		2	6
represented		1	1
research		1	2
role		2	2
sharing		2	13
skills		1	4
social media		1	1
struggle		1	3
students		3	8
teacher candidates		2	8
teaching		3	13
teaching experience		1	3
teaching presence		1	1
tension		1	2
think		1	2
time		1	1
tinker		1	1
UDL		1	1
valence		2	9
facilitate		1	1
ways of knowing		1	1

Feb 9, 2022 2

H.2 Codebook Descriptions - list

1. Access and accessibility
2. Activities and events
3. Assessment/ evaluation
4. Assignments
5. Barriers, issues, challenges
6. Blog
7. Choice
8. Collaboration
9. Communication
10. Community
11. Complicated/ complex
12. Connected
13. Constructive
14. Context
15. Copyright/ Creative Commons
16. Creativity
17. Critical
18. Digital/ digital literacies
19. Emotions
20. Engagement
21. Equity
22. Experience
23. Explore & experiment
24. Identity
25. Indigeneity
26. Intentions
27. Journeying
28. Knowledge
29. Learning
30. Literacies
31. Making a difference
32. Media/ media literacy
33. Motivation
34. Negotiation
35. Open education; OER; OEPr
36. Pandemic
37. Pedagogy
38. Practice
39. Public
40. Reflection / reflecting
41. Research / scholarship
42. Sharing
43. Students/ Teacher Candidates
44. Teaching
45. Tension; struggles
46. Think; thinking
47. Time
48. Tools & tech
49. Valence
50. Voice

Descriptions

Code Name	Description	Clarification	Reference Count	Example
Access and accessibility	Access does not equal accessibility; access relates to being able to view or use CMDL / OEPr materials	Accessibility is related to UDL and making materials in multiple formats as required by disabilities regulations and legislation (W3C standards)	33 references in 10 files (access) 6 references in 3 files	"the first thing that we did actually was published a charter for 10 priorities for educational leaders in terms of where we think we might want to be going for strategies for digital technologies, including having them be you know, accessible, and open and free." N.K. artifact "and it's not just, I mean, it's accessible in the AODA way. But it's also accessible since you know, some people have really busy lifestyles, and they need to be able to listen to it while they're doing their dishes, or they want to be able to have a quick glance at something and say, Should I deep dive deeper into that. So, an infographic or a drawing can provide that gateway. And so, for me, that's the core of what multimedia production can do. It can provide these entryways into deeper thinking about topics." U.F.
Activities & events	The doing of stuff with or without others e.g. conference events, workshops, in class activities; professional work with CSSE, CATE etc.	With focus on CMDL and OEPr elements of public, shared, networked, collaborative, media production	69 references in 16 files 40 references in 13 files	"I often do the visitors versus residents grid with my students, just so that they can acknowledge where all of their identities are making footprints and who owns that as a way of talking about the challenges of technology, which I think like that's this big elephant in the room that we don't often get to really talk about. Even the tools that are institutionally supported are problematic, like the LMSs and things like that. So, while you can design some great learning pieces using them, you just have to have a critical eye all the time, to be constantly vigilant about their use." U.F.
Assessment / evaluation	Practices and design of student tasks to make learning visible; includes feedback and assignment descriptions	Applications of CMDL and OEPr strategies to ensure students show what they know and can do	22 references in 9 files	"I try to do my best to take on an ipsative sort of assessment approach. So, students are encouraged to recognize this, you know, how, what they came in with in terms of their own skills and knowledge versus what they leave with, versus say criterion reference, or reference. So, I really believe in the ipsative assessments and looking at personal growth." E.R.
Assignments	Tasks that students complete as part of the course assessments		15 references in 6 files	"can't just make an assignment that requires students to use a technology and say I'm doing it because you're not. You're integrating technology and maybe fairly effectively, but you're not supporting future teachers in building their digital media literacy." O.W. "just giving choice and options of how to do assignments. You know, are they written? Are they video, audio? Just moving away, I think from this notion of what traditional is in academia, and very colonized structures that we have in place to moving away and I think that also lends itself to open work, because it's really breaking a lot of boundaries and saying, This isn't what it needs to look like." R.G.

Barriers, Issues and challenges	Something or someone that creates a block or stop to MDL and or OEPr practices, strategies	Most frequently mentioned was time; funding;	Barriers: 28 references in 12 Issues: 55 references in 11 Challenges: 53 references in 14	"So, there's barriers in terms of accessing that unconditional hospitality, that we might try to share & co-share with each other within a space of teaching and learning" F.J. "I have an English Lit background, and semantics matter. Terms matter. Definitions matter. What are we talking about? Because we sit in the same room, and all talk about a word, and we all think different things. That's ripe for misunderstanding and miscommunication." L.V.
Blog	Web based journal where ideas and comments are posted	Most frequently mentioned were Wordpress and Blogger	43 references in 15 files	"A focus included building community across BEd years via blogging and social media engagement. We learned with, about and through digital technologies to support learning." O.W. "their own blog feed of their learner blogs … and these all become a knowledge building repository, a curated collection of information that is relevant to this course." L.V.
Choice	Building into CMDL and OEPr options for different modes and tools to complete tasks	Options for how, where, when, with whom to share, engage, connect	19 references in 7 files	"I'm also very careful not to push people out there. It's really a personal choice, how you want to engage or how much you want to contribute. So, we do focus on it as a resource, and a community to join and contribute to, but that may come later, for some of them." C.S.
Collaboration	Who and how work is done together with someone/ group e.g. students, networks	Includes co-creation; co-design;	27 references in 14 files	"so, they were so excited, and we decided to collaborate. So that was the big thing that got me sort of into media, you know, it a little bit more depth, because they were producing messages" A.T.
Communication	What is being said/shared by participants; with whom the message is being shared; text, audio, video, graphic information	Also includes conversation and digital productions	13 references in 6 files	"when I ask students to create a blog and start posting their ideas, I have to ethically also engage them in conversations about the difference between submitting an assignment to me that's private, the other students don't even see it, versus putting something on a website that the world can see. And how does that influence our communication?" B.C.
Community	People together with similar purpose and belief systems	Also includes personal/professional learning networks; relationships; support	45 references in 13 files	"there is a need, and there's a hunger for community, you know, teachers learn through collaborate, like, you know, teachers share their practices, they want to come together. And COVID has also shown us that we really need one another more than ever." S.H.
Complicated / Complex	consisting of many different and connected parts with confusing relationships	Reference the Cynefin graphic to tease out the differences	12 references in 5 files	"But as teachers we don't consider the complexity of the task when you layer media literacy and digital literacy and this is something that we need to know better - how to work with that complexity and the layers and how to do all those things at the same time, pull them apart and then put them back together." D.L.
Connected	Relating to how ideas, people, topics, actions are connected		27 references in 10 files	"I'm thinking a lot I've been using Bourdieu's capital as well, in thinking a little bit about connections between language or cultural capital, linguistic and cultural capital and digital capital. By but yeah, that those connections are very, very rich" N.K.
Constructive	What was created and how	e.g. infographics; editorial work on		"Constructing meaning from graphic artifacts – in the process of creating them and in the

	it was put together (constructed) and for what purpose	publications; professional blogs; dissertations		process of deconstructing them. There is a process of noticing". (from my research journal notes)
Context	Environment, locale, structures (social, physical); geographic, temporal	Factors and features of where the OEPr and CMDL are happening Also includes institutional history and culture	52 references in 13 files	"so we need that history. Otherwise, I think we, we make mistakes going forward. Like, you know, sometimes people ask about changes to a program, I think you need to understand the institutional history and what's been tried within this context, what's worked and why things have not, because I think it's easy to critique." L.V. "my areas of expertise when I was teaching was really educational psychology, learning theory, and then my sort of side passion was physical education and active living. So, I did teach some of the methods courses ... We were a small, small faculty. So, you kind of did a little bit of everything. And then we developed a graduate program and so the faculty has become bigger." L.L.
Copyright / Creative Commons	Rights and permissions with authored works by self and/or others; intellectual property rights (IP)	Licensing and fair dealing as applied to educational contexts; awareness of links to CMDL and OEPr Includes IP (intellectual property)	16 references in 7 files 11 references in 6 files	"Flickr has been another place. It's not as much community and openness. But it is a great place to host that I know, people are finding images really easily. And I really, I want to help people have images for complex ideas. And so that's one of my motivations is releasing it all under Creative Commons …" U.F. "you've also I think, with teacher candidates, they're very, they're interested in Fair Dealing, and what's allowed in the classroom under that, and there's lots, right, it's actually really exciting. They have a lot of creative flexibility." C.S. "It's been fascinating because it's unearthed the complexity, you know, of intellectual property, knowledge creation, collaboration, you know, like, yeah, it's kind of fascinating." L.V.
Creativity	New ways of doing, thinking, being (focusing on CMDL and/or OEPr		8 references in 7 files	"sometimes students do creative things, it's like, man, I don't even think that like so like, then the next time I get a course syllabus I give those kinds of examples so that students know that they can do that." F.J.
Critical	Important, essential, pay attention and ask questions about what is being done and how it's being done		49 references in 10 files	"I'd like to say to that having a critical lens, for me is a core tenet. Because any instance in which we see technology as neutral as not having been socially constructed and not constructing us, I believe to be problematic, especially today." N.K. "My research looks at video production as a critical digital literacy practice. I am now theorizing this work more expansively as global literacies." A.T.
Digital / Digital literacies	Relating to any electronic and internet info, materials, practices		43 references in 13 files / 54 references in 14 files	"we actually did the data collection of six children who started using all kinds of little digital elements, even when they were working construction for making emojis. Using digital language." (D.L.) "I was technophobic, I had no interest in digital technologies." O.W. "There's digital literacies I would actually say it expands into network literacies and open

				literacies. And honestly, like when we use digital literacies alone, in my opinion, it should be all of it. I also think that we should be using all three of those terms." L.V.
Emotions	Relating to feelings relative to CMDL and OEPr	Mentioned: anxiety, confidence, courage, disgust, enjoy, excitement, fear, pride, trust, vulnerable	Fear: 12 references in 5 files Vulnerable: 15 references in 3 files	"A reflection from 2010 is instructive as to the at times frustrating development of digital literacies (I'm happy to say I've come a long way since then with what is, I hope, a longer way yet to go)." O.W. artifact "Like I'm less fearful of the messages because I kind of know how they're constructed. So maybe there's more to the connection between those than I was thinking, if you think about, I mean, I think a lot of our audience on my work, right? And self as audience." D.L. "think of all the positive that could come out of that, but it's the vulnerability of this is my thinking right now. And it's continuing and not always having to be that finished product." N.K.
Engagement	Actively involved in learning and conversations with others	For CMDL and OEPr this is participatory and networked	19 references in 9 files	"the expectation is that you're engaged in learning, you're engaged in demonstrating evidence of your learning. You're engaged in developing relationships between, like, with me with others, and I need to see it. And I need to hear it or I need to like I don't know, feel it in some capacity." R.B.
Equity	justice according to natural law or right/ *specifically* freedom from bias or favoritism	Related terms/codes include EDI; SJ;	11 references in 6 files	"How do we support all these complex ways of thinking and doing with digital tools? We've got a lot of questions about equity, of access and skills development. And they've got a lot of questions about in some ways, how to push back" S.H. "trying to become more aware of that, but also open access in terms of use of language, so gender neutral language for example, and how we present that in our writing" N.K.
Experience	Having done something before; gaining understanding and skills from doing it	e.g. experiences with blogging or Twitter sometimes connected to activities and events	40 references in 10 files	"this should not be about the tools, that should be learning to teach and becoming an effective educator. But also, as part of that learning, when and when not, the digital tools might support the learning experience." O.W. "that participatory nature, that agency, and voice of the learners, so learner centered to me is agency and voice, because that starts from a deeply held belief that, you know, students come at any age, they come with, you know, many lived experiences and social connections and, you know, experiences in the world that they draw upon, no matter what the learning task is." B.C.
Explore & Experiment	Take a closer look at affordances of tech or web resources; trial and error; applying a scientific method to learn	Includes the idea of playing with ideas, tools, tech; tinkering around with tech; willingness to make mistakes; show students how to 'look inside the black box'	Explore = 15 in 6; tinker = 14 in 10	"so I'm not a the most systematic person as far as like, tool acquisition. I'm very much a play in the sandbox, kind of, make a mess, play around with things, but I am always interested in trying things that can solve a problem that you've previously had. And so maybe this will be a new way to do it." U.F. "taking time to learn a new tool, or to think Oh, Canva just came out with some new functionalities, I want to explore that, because that definitely informs my teaching. But also, it has me thinking about new possibilities and different things that might lead to research questions. So, it's kind of cool to be able to

				position yourself as learner and take that time irregularly to keep learning" N.K.
Identity	Characteristics and qualities of the individual or group		30 references in 10 files	"I guess where the critical part comes, is partly about the tool, but really more about the content, right? And the kinds of ideas that are in there. So, talking about culture and identity and in these cases, also religion, and language has become part of it." D.L.
Indigeneity	Relating to Indigenous perspectives as relating to CMDL and OEPr	Also including decolonization	7 references in 3 files 3 references in 1 file	"debate around whether or not indigenous knowledge can be recorded, whether it can take on a Creative Commons license, or an open license. And I think that's a really important debate" E.R. "it's important that we understand Indigenous knowledge in its entirety, and also understand the context, not only just the land, but also the space and who's around and who's in that room at the exact moment, and how that matters to it that I guess the importance of context and respect to indigenous knowledge." E.R.
Intentions	a determination to act in a certain way; aim to bring something about	What they hoped would happen; what they thought was the best way to do things	55 references in 13 files	"I think, you know, in early days, or on the, on the frontier of any of these innovations, sometimes it's easier to just kind of do a proof of concept without asking, and then explain what you've done. And talk about the safeguards you've put in place, you know, … but you're not just kind of doing this. You know, on the edge, without any thought" B.C.
Journeying	Toward into teaching; includes beginnings, pathways, directions, footprint	Focusing on OEPr and CMDL in their teaching practices and scholarship	25 in 9-journey 28 in 9-begins 40 in 12 (pathway)	"Openly sharing my dissertation online, while not very exotic today, given the plethora of digital repositories full of theses & dissertations, was a bit unusual when few dissertations were OA." B.C. "I don't have a traditional path into teacher education. I don't have a traditional path into educational development. I think that's mostly the case. … it's very, very third space kind of role." C.S. "because we're all going to go in our own canoes, and that started to get me to start thinking about pathways and journeys and paths and finding your way through the forest and experiencing things for yourself and making mistakes. So, I talked about mistake making and not being perfect." R.B.
Knowledge	Information; learning; what is known or coming to be known	This includes knowledge building; ways of knowing;		"I began to introduce my students to ways of making and ways of playing with digital tools to support their learning and expression of their learning." O.W. "I think the other thing is like co creation, like I think open access to is about the relationality of co-creation. And so, you know, like from the start, like co-creating with teachers and students that knowledge as well as I think important, and then even having the conversation about how they'd like to share it." F.J. "then the constructive part is actually, you know, building that knowledge, not just giving that knowledge. And I think that might be the difference in the open, the openness. So even, even if you are, you know, doing research that that isn't necessarily published in an open access journal, you're sharing that

				knowledge because those students are building it together. They, they own it, they take ownership of it. So then, you know, you're spreading it, spreading the seed, as they as they take it forward" L.L.
Learning	Focused on their students and their own professional learning	Impact or considerations for OEPr and/or CMDL	65 references in 16 files	"Learn from where you are; multimedia can provide entries into learning, gateway to understanding" "So, a lot of times it's sort of expectation, going back to purpose, you know, so your purpose, and that your learning outcomes are closely aligned. And if they're not, then let's figure out how they can be better aligned." U.F. "when considering openly licensed materials, those offered in digital formats are also easier to adapt. This means that learners can annotate, highlight and mark up resources to support their learning, and educators can customise and adapt them to meet the goals of their course" C.S. "helped me understand that open learning is all about the student, and how am I a part of their learning as opposed to telling them what to do is more than guiding being the guide on the side, it's to really be there to support and help negotiate and co-design the direction that a student wants to go" R.B.
Literacies	Relating to traditional print, expanding into multimodal and transliteracies	Relevant to OEPr and CMDL	37 references in 10 files	"students don't come into your classroom without literacy. They come in with actually all types of literacy, but it might be gaming literacy, it might be, you know, a different thing might speak Spanish or Greek or whatever, or Indigenous languages. And so, everyone brings in different types of literacies. But we just don't, you know, if it's not English language literacy, we don't count students as literate." E.R. "It's a mix. I always make it a mix because I don't think anyone should talk about, you know, reading about without doing I think the doing and the skills are part of forming the literacy. So, it's always a mix of the, you know, the theory and the, you know, the understanding around it as a concept. And then the doing of it. Yeah, it has to be there or they're learning the skill disconnected. You know, and I think the two have to be paired" L.V.
Making a difference	How they are making an impact and possible influence on others; being influenced by others (influencers); social justice	People who influence or impact their MDL and/or OEPr; people or networks they have influenced or impacted; people who have influenced them including theorists	Impact = 35 references in 14 files Influence = 22 references in 7 files People = 94 references in 15 files	"it's just weird how everything fits together. So, I guess, you know, the idea that we're better together, that our voices matter from any place that we can find, we can build closer relationships with people that we don't necessarily know, again, that's strength of weak ties." E.R. "I think that that actually has had a pretty major influence like that just the very notion of network has been a very difficult one for systems of schooling to kind of come to understand and accept as relevant. I mean, schools are built on the technology of the book, right?" B.C. "I think then that gets that conversation that leads to the social justice side of the work. Because I don't I think sometimes open is just

				created with free, but it's so much more than that." R.G.
Media; Media literacy	Social media; media production; media messages; news and advertising	Also coded specific factors in MDL such as privacy, security, meaningful production, trusted sources		"I think that there's some unclear fogginess on what some people think of media literacy and others. So I think media literacy includes UDL, and not just accessibility, but having access for all whatever that means." R.B. "for me media literacy has to be partly defined by the tools that are used and their affordances. Tools/things have some agency" "The digital is like a medium, I guess, that they're working through. But yeah, media literacy, I mean, digital literacy, do you have to have an audience?" D.L. "also a huge interim information literacy fake news piece here because we have to decipher media, we have to make meaning from, you know, the media that we consume, but at the same time, we're not just consumers. We have to be able to critically consume and critically create new media." E.R.
Motivation	The impetus or reason for doing what they do with focus on MDL and/or OEPr	Curiosity to use certain ed tech; fascination with how learning happens; compelling reason like social justice or feeling isolated	36 references in 13 files	"for me, a critical lens is necessary, looking at it critically and thinking about social implications of these literacies. And as a motivating factor, but also as a reason sometimes to be wary or to not engage in certain practices or to not adopt certain tools, as well. So those are probably key for me." N.K.
Negotiation	Dialogue between two entities; mutual interest; beneficial outcome	Within a participant, this is internal talk about what is best action to proceed toward beneficial outcome	9 references in 5 files	"open educators don't tell you how to do it, but they negotiate and support you on your learning journey. So you want to figure it out?" R.B.
Open education; OER; OEPr	Visible, accessible, shared	Open source is mentioned by 3; open publication mentioned by 3 others	Open: 125 references in 18 files Open production: 39 references in 17 files	"it's a gradual, I think, for me, I knew the importance of sharing in the field of education, sharing our resources, sharing among colleagues, but also within the larger field very early on, but how to go about doing that in the open is something that took longer." N.K. "And that's been around for decades … that's one of the problems I find is the profs or open educators out there that do not come from education think they're creating something out of the blue, and they're attributing it all to open education" "I think open education should go back to be about open access, not open mindedness. We want to have open minded teaching or student honored teaching, needs to be called student honoring. It needs to be called whatever theory that is being applied, or we're recreating some separate blob out there, and people won't find the root research going back to the 1950s or earlier, you know … Like respect our field." L.V. "free. Collaborative in some way, I think that typically when it's an open educational resource or open educational practice, we would adjust based on the community and based on conversations and reading and research in the expertise of others" O.W. "I would say that there are probably, you know, four words, I would start with, you

				know, it's, you know, connect, collaborate, communicate and create. And I've written about those." B.C.
Pandemic	Impact and issues arising from the COVID-19 pandemic	Relating to online teaching using technology & how it impacted CMDL and/or OEPr	34 references in 11 files	"The Covid 19 pandemic has forced education online. This has pushed digital literacies forward in the Canadian context. Now technology is not simply an add-on: it became essential for education to take place." D.L.
Pedagogy		Relating to what and how we teach	17 references in 7 files	"I have this book out because somebody called and described the banking model, which I always hear somebody had described the banking model as necrophilic pedagogy. … It's on page 60 something. And he, because it creates dead inside learners … the idea of students as objects and not subjects is really an important point about open pedagogy versus like, you know, this direct the directed thing." U.F. "these technology companies that are trying to produce technology for learning, don't understand the learning principles, don't understand that pedagogy that goes with it." L.L.
Practice	Noun: the sum total of what it means to be a teacher Verb: the actions and moves	The what and how of teaching	39 references in 15 files	"a tech knowledge is not just a textbook, how can we how can we change our practices to be to be more open so that we are engaging in like knowledge making together as opposed to like, I have the right answer" U.F. "I may know more about a particular part of that task, and therefore, I'm providing some of the boundaries. But I always want to keep those flexible as well, you know, so I think flexible boundaries would be how I would describe a lot of my practice" N.K.
Public	Shared openly to all; no barriers or password to access	Forward and outward facing; accessible and visible to all	14 references in 6 files	"Teaching has always been a public profession, right. But we're layering in public digital networks now into the professional practice." S.H.
Reflection/ reflecting	Considering what was done and thinking about what it means or how to improve	For themselves and in their OEPr; with evidence or use of CMDL	18 references in 8 files	"But where I did see the differences, which surprised me is because they had a reflective piece that they had to write about their reflections at the end, which was specifically an op ed piece on the future of learning, were much more meaningful than I'd ever read before." R.B.
Research and scholarship	Looking at ideas, contexts, questions to find answers or new ways of doing	Investigations, inquiries into OEPr and/or CMDL	Research= 65 references in 11 files Scholarship= 17 references in 7 files	"I wouldn't necessarily say that it's coming explicitly from the institution, but from colleagues who are working in the Ed tech field, I think that that is where I've had I've been most influenced and just think thinking about doing research in the open, for example, is something that's of great interest to me." N.K. "I think those are probably the most explicit ways that they're, the research was connected to digital fluency, and really looking at measuring, assessing, assessing how, how they do that" L.L.
Sharing	Gifting to others without expectation of gain or reward	Giving of oneself, time, attention, resources, ideas, etc.	100 references in 16 files	"It does, it does, because I'm more compelled to share things in French because there are so few resources. But as I mentioned earlier, it

				was about getting comfortable enough to do so in real time." N.K. "sometimes that then it doesn't necessarily get acknowledged as you being open and sharing. But it is. Let's say that, again, that's sort of more of a servant leadership, where I've done the job" L.L.
Students / teacher candidates	Those whom the participants teach; members of their classroom spaces	Mostly focused on teacher candidates, but also mentioning K-12 since these are who the TCs will teach	20 references in 9 files; 22 references in 9 files	"I'm very eyes wide open when it comes to discussing these things, because of course, I'm asking them to be participants in this social media world. And I don't do it without letting them understand what the implications might be." E.R. "I think also being mindful of how much students are being asked in terms of creation comes in because I think, I think we're all trying to be innovative in similar ways" R.G.
Teaching	The work of instruction; preparing classes and content for students	teacher education; teaching experience	Teaching:65 in 16 TEd: 25 in7 Experiences: 22 in 10	"teaching them how to canoe. And I was telling them how to hold their paddles. So, I was instructing how to hold your paddles and we were all standing on the dock because we're all going to get into our own canoes. I explained, this is how you hold paddle, and then I looked up and I remember seeing all the different ways that they were holding their paddles." R.B. "my teaching I try to create spaces for student-led inquiries based on student interests, that include the use of digital technologies" A.T.
Tension/ Struggle	Push/pull forces that impact or influence decisions on OEPr and/or MDL	When others do the push/pull; when they themselves do the pushing/pulling	29 references in 10 files	"that's where I think I'm still in struggle and tension and with my colleagues and higher education, in terms of pulling apart media and seeing it for what it is" R.B. "I think there are a lot of tensions around participatory online practices, especially for children, you know, aged nine to 13 or teachers were certainly expressing a range of concerns." S.H.
Think; Thinking	Ideas or thoughts that inform OEPr and/or CMDL		24 references in 9 files	"play as a kind of a critical literacy. And particularly with children using iPads, and that sort of thing. And so just thinking, thinking about that kind of immersive critic, critical literacy, I think is really important to me thinking about play and inquiry in digital literacy." P.L. "the reason that we introduced this project was that we recognize that there were these ways of thinking and doing and being in our candidates lives that were personal, but that when it came to professional digital practices, they'd had very little support and very little experience in navigating and negotiating a professional digital presence" S.H.
Time	Relating to how long things take or how time impacts possible actions and workloads	Seen as one of the barriers to CMDL and OEPr	31 references in 10 files	"sometimes I find time to be a barrier with all the demands that are placed on us. I find there's a lot of uptake and enthusiasm for the work. And so, I haven't really had conversations where individuals may be strongly opposed to open education, or we're creating the resources that I know sometimes does take place. It's more around kind of that time factor that comes into play. But there's a lot of enthusiasm around it." R.G.

Tools & tech	Mentioning specific hardware and/or software that they have used or explored; predominant focus on blogs, audio/podcasts, video	A list of all tools and tech mentioned by participants is collected into separate document for analysis	160 references in 18 files **See list of software and hardware listed in Appendices**	"for me media literacy has to be partly defined by the tools that are used and their affordances. Tools/things have some agency" D.L. "LMS I use lightly. It's typically to post you know, what students want to see, especially students who have never taken a course with me, they want to know where stuff is. So, I post the syllabus, I post just a Google Doc with what we do on a weekly basis. That's pretty low tech from a design perspective. I click you know, on the LMS a, put a link to the Discord" E.R. "In my teaching with both undergraduate and graduate students, I have always tended to include an assignment or two that involves online sharing, from student created blogs, podcasts, wikis, VR spaces, microblogging and twitter chats, and various types of co-created or individually created websites." B.C.
Valence		Either negative or positive or relating to struggles	N= 23 references in 12 files +ive=23 references in 10 files	Neg: "You know, and, you know, I have to say, being from education, and seeing these people who are not from education, they're in higher education. But all their bachelor's, master's and PhD's were not and so I feel like, No, it's not right, to hijack all of these different, you know, variety of different constructivist construction is all these different, you know, social things, and then to rebrand it open ed." L.V. P-+ive: "I think finding the time for that co-creation to come together, because I love, I love what we create. And I think it can be really useful across courses as well, not just like, you can use it in so many different ways look at it with this lens and another lens." R.G. "I'm very, very conscious of what I do in that space. So, my use of open platforms is strategic, in the sense that I do try to think through, I'm happy to quickly tweet positive, you know, stuff about colleagues and what we're up to and papers and retweet students. I mean, I love doing that." N.K.
Voice	Spoken or written; how the words and text represent what the author / participant says/means	Unique quality in word usage, tone, ideation that shows 'who' as much as 'what' is being said	17 references in 8 files	"That is kind of an instructional wrap that you can draw upon any digital asset, really, whether it's copyright or not. But what you could create could be a community of voices, or an artifact that could be part of the open domain." C.S. "So co-constructing, making sure I'm bringing in a variety of voices when possible. I don't have this in the BEd program. But another course I teach at a graduate level is sort of this notion of an evolving syllabus." R.G. "Because I think it really creates tunnel vision otherwise, for students and future teacher candidates, for future teachers. If we, if we frame development, the way that it's traditionally presented in textbooks, I think. I also like the social justice side of open education in terms of giving voice to scholars and to educators, to students, who

				traditionally don't get to have their voices represented." R.G.

Appendix I

MDL Frameworks Comparison (Table 4)

Research Findings	Media Literacy (Hoechsmann & Poyntz, 2008, 2017)	MediaSmarts	UNESCO MIL (UNESCO) *Graphic pg 56*	Digital Literacy (Belshaw, 2011)	Digital Literacy Competency frameworks analysis by Martinez-Bravo et al 2022	Dig.Comp.EDU (Inamorato do Santos et al., 2016); Redeker, 2017)	DQ institute (digital intelligence) Global standards
(DeWaard, 2022)	7 literacies		3 components with 4 competencies and 113 performance criteria	8 literacies	6 dimensions	6 elements https://joint-research-centre.ec.europa.eu/digcompedu/digcompedu-framework_en	24 competencies, 8 areas (combinations that are separated for analysis)
	consciousness			cognition	cognitive		
communicating / audience	communication	reading media – communicate meaning	communication	communicative	communication falls under social dimension	communication is under 'facilitating leaners' digital competence	communication is one of the digital dimensions
		consumer awareness					competitiveness
	convergence						
creativity	creativity		creation	creative	creativity found under cognitive dimension		creativity - central element
knowledge building	copy/paste			constructive			
connections	community	community engagement	connections – physical/network	cultural	social	collaboration – professional/ learning	co-creator as part of digital identity
			participation	civic			citizenship
intentionality				confidence	emotional		
criticality	P 201 in notes – see quote below	finding & verifying	part of definition of MIL pg 28/29	critical	critical	analyzing evidence found under assessment	critical thinking as one of 12 future-readiness skills
emeric (production/ performance)		making & remixing			operational (technical)	digital resources; teaching / learning	
persona/ identity		media representation			projective	professional engagement	identity
		ethics & empathy					emotional intelligence
knowledge building			evaluation / assessment			facilitating learner's digital competence; assessment	use
data management (SSPP)	consumption & surveillance	privacy & security	monitoring				safety; security
ownership							rights
collaboration/agency			understanding			empowering learners	
entry / access			access				
			organization				
language							literacy
		media health					

References

Belshaw, D. (2011). *What is digital literacy?* [Ed.D., Durham University]. https://dmlcentral.net/wp-content/uploads/files/doug-belshaw-edd-thesis-final.pdf

DQ institute. (2021). What is the DQ framework? Global standards for digital literacy, skills, and readiness. *DQ Institute Global Standards for Digital Intelligence*. https://www.dqinstitute.org/global-standards/

Hoechsmann, M., & Poyntz, R. S. (2012). *Media literacies: A critical introduction*. Wiley.

Inamorato dos Santos, A. (2019). *Practical guidelines on open education for academics: Modernising higher education via open educational practices based on the OpenEdu framework* (No. JRC115663). Joint Research Centre (JRC), The European Commission Science and Knowledge Service. https://ec.europa.eu/jrc/en/publication/practical-guidelines-open-education-academics-modernising-higher-education-open-educational

Martínez-Bravo, M. C., Sádaba Chalezquer, C., & Serrano-Puche, J. (2022). Dimensions of digital literacy in the 21st century competency frameworks. *Sustainability*, *14*(3), 1867. https://doi.org/10.3390/su14031867

MediaSmarts (n.d.). Defining digital media literacy. [website] https://mediasmarts.ca/digital-media-literacy/general-information/digital-media-literacy-fundamentals/defining-digital-media-literacy

MediaSmarts. (n.d.). Use, understand & engage: A digital media literacy framework for Canadian schools – overview. [website]. https://mediasmarts.ca/teacher-resources/digital-media-literacy-framework/use-understand-engage-digital-media-literacy-framework-canadian-schools-overview

Redecker, C. (2017). *European framework for the digital competence of educators: DigCompEdu* (EUR - Scientific and Technical Research Reports EUR 28775 EN). Publications Office of the European Union. https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/european-framework-digital-competence-educators-digcompedu

UNESCO. (2013). *Global media and information literacy assessment framework: Country readiness and competencies*. UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000224655

A closer view of this appendix document is available through Scalar site.